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ABSTRACT

This document includes three papers which address the special demands that supported employment places on vocational evaluation and assessment practices. An introductory chapter by Frank Rusch et al. discusses target populations of the Illinois Supported Employment Program, program evaluation, degree of program implementation, and costs and benefits of supported employment. The first paper, titled "Vocational Evaluation and Eligibility for Rehabilitation Services" by Bruce Menchetti and Frank Rusch, describes the evolution of current vocational procedures and the utility of current practices in the development of effective supported employment programs, and recommends changes in evaluation and eligibility procedures. In "The Use of Standardized Assessment in Supported Employment," Lizanne DeStefano takes the position that existing assessment techniques contribute valuable information for decision making and documentation within the supported employment model. The article presents a number of standardized techniques, evaluates their strengths and weaknesses for use with severely handicapped individuals, and gives guidelines for selection and use of standardized tests in supported employment. Menchetti and Rusch, in "An Analysis of Select Psychometric Properties of the Vocational Assessment and Curriculum Guide," report on the development of a vocational and social skills rating scale that includes skills identified by employers, and examine the instrument's reliability and validity. (JDD)

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Supported Employment in Illinois: Assessment Methodology and Research Issues

Volume 2

Lizanne DeStefano
Frank R. Rusch

EC 201786

TRANSITION
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The following principles guide our research related to the education and employment of youth and adults with specialized education, training, employment, and adjustment needs.

- Individuals have a basic right to be educated and to work in the environment that least restricts their right to learn and interact with other students and persons who are not handicapped.
- Individuals with varied abilities, social backgrounds, aptitudes, and learning styles must have equal access and opportunity to engage in education and work, and life-long learning.
- Educational experiences must be planned, delivered, and evaluated based upon the unique abilities, social backgrounds, and learning styles of the individual.
- Agencies, organizations, and individuals from a broad array of disciplines and professional fields must effectively and systematically coordinate their efforts to meet individual education and employment needs.
- Individuals grow and mature throughout their lives requiring varying levels and types of educational and employment support.
- The capability of an individual to obtain and hold meaningful and productive employment is important to the individual's quality of life.
- Parents, advocates, and friends form a vitally important social network that is an instrumental aspect of education, transition to employment, and continuing employment.

The Secondary Transition Intervention Effectiveness Institute is funded through the Office of Special Education Programs, Office of Special Education and Rehabilitative Services, U.S. Department of Education (contract number 300-85-0160).

Project Officer: Dr. Mel Appell

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For more information on the Transition Institute at Illinois, please contact:

Dr. Frank R. Rusch, *Director*
College of Education
University of Illinois
110 Education Building
1310 South Sixth Street
Champaign, Illinois 61820
(217) 333-2325

Merle L. Levy, Publications Editor

Supported Employment in Illinois:
Assessment Issues
Volume 2

Lizanne DeStefano
and
Frank R. Rusch

The Secondary Transition Intervention Effectiveness Institute
University of Illinois at Urbana-Champaign

EC 201786

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Preface

Supported employment is rapidly taking its place as the preferred vocational service option for a large number of persons with handicaps. Federal and state legislative and fiscal commitment seem to secure that status. The special features of supported employment, with its emphasis on community employment and ongoing support, require the development of new technologies and practices in program planning, training, and program evaluation. Vocational evaluation has long been the means of obtaining information that can be used to guide these activities. In order to be maximally useful in supported employment efforts, vocational evaluation techniques must be sensitive to those unique aspects of supported employment.

In this volume of Supported Employment in Illinois we have chosen to include three papers that address the special demands that supported employment places on vocational evaluation and assessment practices. Although some themes remain common throughout the three papers, each approaches the topic in a slightly different way.

In "Vocational Evaluation and Eligibility for Rehabilitation Services," Menchetti and Rusch attempt to build a case for changes in the traditional vocational evaluation procedures of the rehabilitation process. It is their contention that many of the empirically based tenets of supported employment have direct implications for vocational evaluation. Given the focus on systematic training, supported employment evaluation efforts have to be designed to identify needed training resources and individual training objectives. In order to facilitate community job placement, vocational evaluation measures must be community referenced, that is, closely related to labor market needs. Finally, long-term follow-up services associated with supported employment will require evaluation techniques that are continuous to ensure that retraining can be provided and that employer satisfaction is monitored.

To insure that evaluation information is functionally related to community work opportunities and the employment needs of individuals, the evaluation process must contain several components. These critical components are evaluating local labor markets, evaluating potential employees' vocational and related skill needs, developing individualized training plans, continuously monitoring program efforts, and evaluating employer satisfaction on a regular basis. Readers of this paper may want to examine the extent to which evaluation practices in their own agencies include each of the critical components. The recommendations and examples of a more functional approach to vocational evaluation of persons in supported employment programs can be used as templates to improve service delivery at the local level.

DeStefano takes a different, yet complementary stance in "The Use of Standardized Assessment in Supported Employment."

Acknowledging that traditional work-sample systems, tests of academic skills, language batteries, and special-aptitude tests bear little relation to actual job requisites and have extremely limited validity for the population of persons involved in supported employment, DeStefano advocates the use of situational assessment, ecological inventories, and criterion-referenced measures in supported employment settings. However, she goes on to cite instances in which standardized assessment information is also valuable in a supported employment setting and argues that it should not be excluded entirely from the vocational evaluation process.

For example, intelligence test scores should not be used to exclude persons from service on the basis of perceived low ability, but they can be useful to summarize information regarding the types of persons participating in a program as an aid to administrators and planners of service. Adaptive behavior scores can further describe population characteristics, because they often include items that indicate community functioning. Adaptive behavior scores can also be used in a repeated-measures fashion to document the adaptive progress of an individual in supported employment or the overall influence of integration in areas other than employment, such as leisure and residence. This evidence can be used for program evaluation purposes to document changes in independent living as a result of participation in supported employment. In a similar manner, quality-of-life measures can be used to assess changes in lifestyle satisfaction as a measure of program success. Both traditional and contemporary assessment techniques contribute valuable information for making decisions and documenting outcomes associated with supported employment. The task that service providers face is not whether to use one approach over the other but to devise an assessment package that adopts the best of both traditional and contemporary approaches. DeStefano's paper offers guidelines for doing so.

Finally, in "An Analysis of Select Psychometric Properties of the Vocational Assessment and Curriculum Guide," Menchetti and Rusch demonstrate that an instrument with psychometric properties associated with standardized instruments can be used as a measure of the social and vocational skills of persons with handicaps who are interested in competitive employment and can also provide information that can be used to develop training plans and instructional programs. The VACG is the first of a new wave of assessment instruments developed for use in supported employment. At this time it is the only instrument on the market that takes into consideration employers' expectations for their employees' performance on the job. It approaches the notion of content validity in terms of the local labor market and social norms. Service providers may want to consider the use of the VACG in their own supported employment programs.

We hope that the papers included in this volume will provide useful information, offer helpful suggestions, and stimulate thought among those of us interested in supported employment in

Illinois and throughout the nation. We welcome your comments and suggestions and wish you the best of luck in your efforts.

Lizanne DeStefano

Frank Rusch

July 1987

Urbana, Illinois

Introduction to Supported Employment:
Costs and Benefits

Frank R. Rusch, John S. Trach, Debbie L. Winking,
Jeffrey J. Tines, and Laird Heal

Competitive employment is the normal and expected career path for persons who are nonhandicapped. The opportunity to be a part of the work force produces profitable personal and societal outcomes. Although competitive employment may not be a suitable option for everybody, it should be available so that all persons can, to the greatest extent possible, enjoy and engage in work that may result in individual or societal gains (Rusch, 1986). Across the country, supported employment programs are making competitive employment possible for a group of individuals for whom competitive employment has not traditionally occurred or has been interrupted or intermittent as a result of their handicaps. The State of Illinois has been a leader in the movement to make supported employment a readily available outcome in the adult service delivery system. In this volume, we examine some salient characteristics of supported employment in Illinois, including the target population, the degree of model program development, and the costs and benefits of supported employment.

Who Is Served in Illinois?

The Illinois Supported Employment Program is designed to be an alternative to day activity and sheltered employment programs. Owing to the interest in utilizing supported employment to extend services to individuals previously excluded from integrated work opportunities, it has been important for service providers to collect data that explicate the range of participant characteristics. Table 1 presents some of the characteristics of the 514 individuals who have received supported employment services from the 30 adult service agencies throughout Illinois during two periods, February 1987 and June 1987. The characteristics of persons served remain stable across time. As of June 1987, the mean age of these workers was approximately 30 years. Nearly 64% of the workers were male. The primary handicapping condition of most workers was mental retardation with full-scale IQ scores of the participants ranging from 17 to 97, with a mean score of 59.7. Secondary impairments such as cerebral palsy and physical handicaps have been identified for approximately 42% of the workers. Seventy-two percent of the workers are white; 20% are black. Hispanic and Asian workers are served in lesser numbers. The majority (52.9%) of the workers live in natural or adoptive homes; 19.2% of the participants live independently or semi-independently; just over 8% reside in an Intermediate Care Facility for Developmentally Disabled; and 11.6% live in a Community Residence Facility. This last figure represents a

Table 1

SEP Worker Characteristics

(N = 514)

Characteristic	February 1987	June 1987	Change
Mean age (years)	30.6	30.6	0.0
Average full-scale IQ	61.1	59.7	-1.4
Sex (% of total)			
Male	64.4	63.6	-0.8
Female	35.6	35.7	+0.1
Not given		0.7	
Ethnicity (% of total)			
White	71.7	72.0	+0.3
Black	22.8	20.0	-2.8
Asian	1.2	1.3	-0.1
Hispanic	4.3	5.4	+1.1
Unknown		1.3	
Living arrangement (% of total)			
Natural/adoptive home	53.4	52.9	-0.5
Semi-independent living	17.5	19.2	+1.7
ICFDD	8.4	8.0	-0.4
CRF	5.8	11.6	+5.8
Other	14.9	8.3	-6.6

100% increase from the earlier period in the number of persons served by supported employment who live in community residences.

The majority of the workers have previously received some form of vocational training, ranging from high school vocational education courses to Developmental Training I services. In addition, 66.7% of the individuals have previously worked in sheltered facilities, and 43.7% of the individuals have had previous experience in competitive employment.

Program Evaluation

The Illinois Supported Employment Program (ISEP) based at the University of Illinois provides technical assistance to approximately 30 state-funded supported employment programs. In fact, ISEP is evaluating model program development and analyzing costs associated with supported employment. An important aspect of model program development is assessing the degree to which these model programs actually implement the characteristics of supported employment that have been associated with important outcomes, such as average hours worked per month, hourly wage, and employment benefits, both monetary and nonmonetary.

ISEP also examines individual worker characteristics such as full-scale IQ scores, previous vocational training history, and residential living arrangements to monitor and evaluate the employment achievements of target employees. In addition, ISEP measures employment service characteristics such as the hours of vocational skills training, assessment, and case management services delivered each month.

Degree of Program Implementation

In December 1985, field-based technical assistance was initiated using scheduled visits to each supported employment model demonstration program to collect implementation data. All visits followed the same formula based on the evaluation instrument -- Degree of Implementation (DOI). During four rounds of visits, model programs (a) were introduced to the instrument and practiced scoring of the DOI (Round 1 - December 1985 to February 1986); (b) collected data on their programs (Round 2 - March 1986 to April 1986); (c) had the opportunity to react to the first year challenge of developing, implementing, and documenting progress in their efforts to establish supported employment in their respective communities (Round 3 - May 1986 to June 1986). The fourth round of visits (December 1986 to February 1987) was designed to document the growth and/or stability of the efforts and to determine the validity and utility of the DOI as a standard for evaluation of supported employment programs.

The Degree of Implementation (DOI) Instrument. The DOI is an instrument based on the research literature related to national model demonstration development of supported employment programs (e.g., projects in Illinois, Washington, Vermont, and Virginia).

The intent of this instrument is to provide the Illinois Supported Employment Project (ISEP) with a standard to evaluate the implementation of the state supported employment initiative and a method for assessing the technical assistance needs of individual model programs.

The DOI is designed to evaluate the process of developing and maintaining a supported employment model. It can be (and has been) used (a) to provide structure for beginning projects to establish supported employment programs by informing them of relevant activities identified through the literature, (b) to analyze the progress of the development of supported employment projects and to document the project's efforts in relationship to a specified time frame, (c) to investigate and identify possible variables that might facilitate program development, (d) to analyze the proposed model in relationship to actual documented services being provided, and (e) to investigate the relationship of the model to selected outcome variables (e.g., level of worker served, hourly wage, tenure). The instrument lists 28 steps or indicators that are categorized according to five components of supported employment programs: (a) Job Survey and Analysis, (b) Job Match, (c) Job Acquisition and Maintenance, (d) Conjunctive Job Services/Interagency Coordination, and (e) Job Fit. Using written documentation provided by the project, the evaluator scores the presence or absence of each indicator either as 0, 1, or 2, or NO (nonexistent), EMERGENT (present but incomplete), and YES (present and complete), respectively. Pre-established written criteria determine the scoring of each indicator and serve as a manual for the administration of the instrument. The overall reliability obtained from the last set of ratings was .87 (Range = .75 to 1.00).

Data collection results. The results of efforts at implementing the proposed model of supported employment are presented in Table 2 and Figure 1. Level of implementation is expressed in quartiles. The first quartile (0 - 25%) is the lowest level of implementation and indicates the degree (percentage of DOI activities) to which a particular project has been implemented. The fourth quartile (76 - 100%) is the highest level of program implementation. Table 2 provides the percentages for each quartile in each round of data collection. The most current data demonstrate that 87% of the projects are in the top three quartiles of implementation and that the most growth has occurred in the second quartile, whereas the third and fourth have remained relatively constant. At this writing 13% of the projects have implemented 21 or more of the 28 supported employment activities (fourth quartile). The same percentage of projects implement 7 or less activities (first quartile), whereas 47% of the projects implemented between 8 to 14 activities (second quartile) and 27% of the projects implemented 15 to 20 activities (third quartile). Data on overall implementation over the six-month period indicate that the number of programs implementing more than 50% of the activities is increasing. Figure 1 shows the steady decline in the first quartile and a

Table 2

Percentages of Overall Scores by Quartile
Degree of Implementation

		Percentage of Projects at Each Level of Implementation		
Quartile	Number of DOI Activities Implemented	March to April 1986	May to June 1986	December to February 1987
1. 0-25% implementation	(0-7)	42	30	13
2. 26-50% implementation	(8-14)	21	33	47
3. 51-75% implementation	(15-20)	27	18	27
4. 76-100% implementation	(21-28)	9	18	13

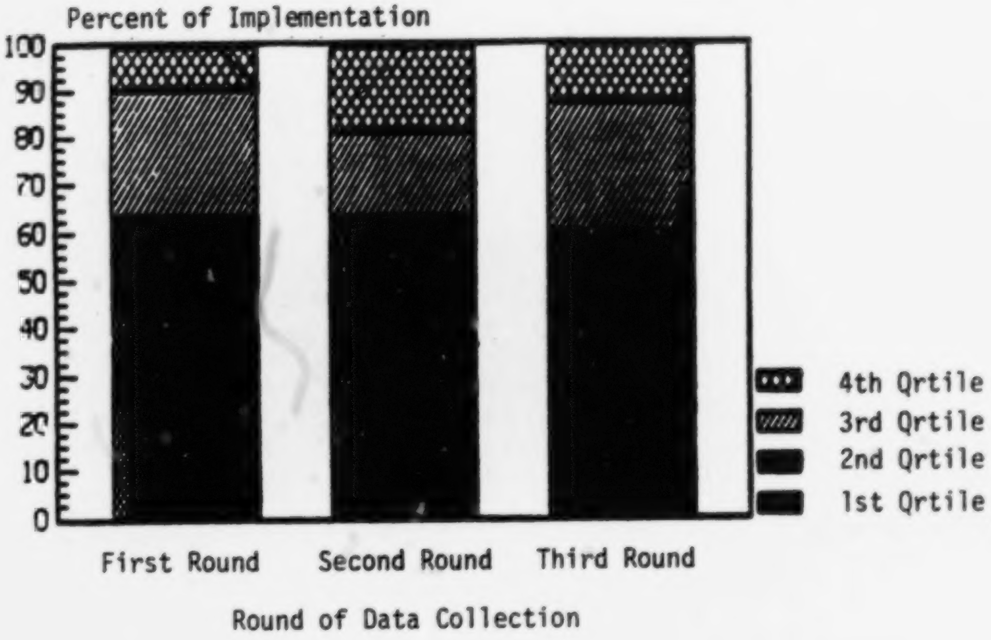
redistribution into the remaining three quartiles over the three rounds of DOI data collection.

The items implemented most frequently are those activities that survey the community (#1), task analyze potential jobs (#6), identify requisite skills (#8), assess and observe vocational skills (#12 and #14), and reassess through observation the client's maintenance of vocational skills (#26).

Although, the items cited in the previous paragraph represent the core of activities that most projects are

Figure 1

Degree of Implementation Summary Data



implementing, they do not necessarily indicate all of the activities that are associated with successful supported employment programs. There are some important activities that many projects are not implementing. For example, the identification and assessment of social skills are implemented at a significantly lower rate than items related to vocational aspects of employment. Ironically, research literature indicates that persons with disabilities lose their jobs most often because of social skill deficits (Greenspan & Shoultz, 1981). It would seem important, therefore, for projects to conduct social skills assessment and intervention activities. It is encouraging that more social skills assessments occurred in the last round than in previous rounds. It could be that as projects gain experience, the need for attention to social skills becomes evident.

It is also troubling that there is a lack of systematic training, data collection, and withdrawal. Only 37% implement this aspect (Item #16) of the Job Acquisition and Maintenance component. Because effective systematic training and data collection strategies are critical to successful supported employment, staff selection and development activities should seek to improve procedures in this area. The low-level implementation of Job Acquisition and Maintenance activities may be attributed to the level of worker being served by the initiative. There is some indication that there is an inverse relationship between the level of worker functioning and scores on the Job Acquisition and Maintenance component of the DOI. This has been interpreted to mean that workers with higher IQs do not require as much attention to training as workers with lower IQs (Trach & Rusch, 1987).

Summary. The DOI data collection indicates that there is a positive trend to increase the implementation of supported employment activities in Illinois since June 1985. Job Survey and Analysis and Job Match are the most widely implemented components; the remaining three components -- Job Acquisition and Maintenance, Conjunctive Job Services/Interagency

Coordination, and Job Fit -- are implemented at consistently low levels. Some possible reasons for nonimplementation of DOI activities include: (a) lack of documentation, (b) inability to implement because of staff resources or lack of technology, (c) staff resistance to change, (d) level of worker functioning, and (e) philosophical differences. Model program development will continue to be evaluated during the next year. Volume 3 of Supported Employment in Illinois will report upon DOI data collected during the fourth quarter (May-June, 1987).

Costs and Benefits of Supported Employment

A comprehensive evaluation of the statewide supported employment initiative requires the explicit identification of the costs and benefits associated with it. In response to the need to define the supported employment model in Illinois economically, an "accounting approach" (Thornton, 1985) was used to estimate the benefits and costs of the statewide effort from the 30 model programs. By using an "accounting model," a detailed itemization of each expenditure and amount of revenue for each supported employment project was determined from several perspectives. For this evaluation of the supported employment initiative, two different perspectives need to be examined. The first perspective considered was that of the individual service recipient, while the other was that of the taxpayer or government agency.

From the perspective of the individual service recipient (worker), the potential monetary benefits include the gross income earned through the production of valued goods and services. In contrast, from the taxpayer's perspective a benefit of the initiative is a decrease in government subsidy that results from an individual's decreased Supplemental Security Income payments. At the same time, the costs associated with supported employment from a taxpayer perspective or government agency are the operational costs that governmental agencies assume by funding the provision of the services. In addition, a cost of supported employment from the individual worker's perspective is the increased taxes withheld from the additional earnings that result from employment.

Cost-benefit research on employment services for individuals with handicaps has been limited. However, there are two studies that should be examined. Hill et al. (1987) used an accounting model (Thornton, 1984) in their cost-benefit analysis of a supported competitive project in Virginia. They determined that supported competitive employment for individuals with mental retardation cost the government agency/taxpayer $8,717 per consumer while this same group realized a benefit of $15,282 per consumer during a 94-month period. In other words, Hill et al. determined that for each $1.00 expended by the government/ taxpayer for supported competitive employment, $1.87 was accumulated in benefits. From the consumer's perspective, the benefit also outweighed the cost of the program with a $1.97 accumulated benefit for each $1.00 expenditure.

A second study by Schneider, Martin, Rusch, and Geske (1981) examined the costs associated with training 23 individuals with mental retardation in a transitional employment program to become food service laborers at a university-based cafeteria. This study compared the benefits (i.e., earnings) of both extended employment programs (e.g., sheltered employment) and transitional employment programs (e.g., competitive employment food service training). The findings revealed that during the third year of the program the total earnings exceeded the costs associated with placement. Additionally, the study revealed that by the end of the fifth year, earnings associated with the employed workers exceeded the costs required to support the individual service recipient.

As a precursor to evaluating the statewide initiative with a cost-benefit analysis, a summary was completed of the reported financial information on individuals who have participated in the initiative. This information was used to answer several questions dealing with the financial status of participants in supported employment, such as:

1. What are individuals with disabilities earning both monthly and yearly as participants in supported employment?
2. How many hours have the participants in the supported employment initiative been working each month?

3. How much money has been withheld in taxes from the earnings of individuals in supported employment?

In response to these questions, Table 3 summarizes the data for two different periods of time, August-December 1986 and January-March 1987. During the period from January to March 1987 the average hourly pay was $3.21. The average number of hours worked was 85.5 hours per month. The average gross pay per month was $276.47 and the average amount of taxes withheld was $34.76 per worker on a monthly basis. The average number of hours worked per month decreased from the first reporting period to the second, accompanied by resulting decreases in gross wages and taxes withheld.

Table 3

Cost-benefit Analysis of the Supported Employment Initiative

Variable	August-December 1986	January-March, 1987
Mean hourly wage	$ 3.04	$ 3.21
Mean hours worked/month	94.91	85.50
Mean gross wage/month	308.58	276.47
Mean taxes withheld/month	45.72	34.76

As some of these more general questions related to the financial status of the participants in supported employment are answered, more complex ones arise. Given the accounting framework provided by the work of Thornton (1985), most complex questions related to the costs and benefits of supported employment can be addressed. The following questions will serve to direct the next round of cost-benefit analyses conducted by the Illinois Supported Employment Program (ISEP).

1. What are some of the non-salary expenditures associated with supported employment efforts?
2. How much of an agency's management support does a supported employment program demand?
3. How do the costs associated with alternate day services compare to those of supported employment services?
4. How do the net expenditures and benefits of supported employment statewide compare?

Summary

Since the start of the supported employment initiative in Illinois, much has been accomplished toward making the benefits of competitive employment available to persons with handicaps. Program implementation data indicate that model programs are carrying out greater numbers of supported employment activities than ever before. Although improvement in assessment and training is still needed, program evaluation data indicate that model programs are becoming proficient in job development, job analysis, and job matching activities. More than 500 persons are currently working in the supported employment model programs around the state. These persons work an average of 86 hours per month at a mean hourly wage of $3.21, earning an average of $277 gross pay per month. The supported employment program is a new one, and the chanllenges facing prospective employees with handicaps, adult service providers, and educators are numerous and complex. However, the initial evaluation of the initiative gives clear evidence of its success and of progress made toward improving the quality of life for persons with handicaps.

References

Greenspan, S., & Shoultz, B. (1981). Why mentally retarded adults lose their jobs: Social competence as a factor in work adjustment. Applied Research in Mental Retardation, 2 (1), 23-38.

Hill, M. L., Banks, P. D., Handrich, R. R., Wehman, P. H., Hill, J. W., & Shafer, M. S. (1987). Benefit-cost analysis of supported competitive employment for persons with mental retardation. Research in Developmental Disabilities, 8, 71-89.

Martin, J. E., Schneider, K. E., Rusch, F. R., & Geske, T. G. (1982). Training mentally retarded individuals for competitive employment: Benefits of transitional employment. Exceptional Education Quarterly, 3, 58-66.

Rehabilitation Act Amendments of 1986, 29 U.S.C. 701.

Rusch, F.R., & Phelps, L.A. (1987). Secondary special education and transition from school to work: A national priority. Exceptional Children, 53, 487-492.

Thornton, C. (1984). Benefit-cost analysis of social programs. In R. H. Bruininks and C. K. Lakin (Eds.), Living and learning in the least restrictive environment. Baltimore: Paul H. Brookes.

Trach, J. S., & Rusch, F. R. (1987). Validation of an instrument for evaluating supported employment programs: The Degree of Implementation. In F. R. Rusch and J. S. Trach Supported Employment in Illinois: Program Implementation and Evaluation (Vol. 1). Urbana-Champaign: University of Illinois, College of Education.

Vocational Evaluation and Eligibility for Rehabilitation Services*

Bruce M. Menchetti** and Frank R. Rusch

The rehabilitation process, consisting of intake, referral, evaluation, individualized planning, treatment, training, placement, and closure, is designed both to determine the eligibility for service of individuals with handicaps and to provide appropriate service to those who are eligible. Two criteria are used by state vocational rehabilitation personnel to determine an individual's eligibility to receive services: (a) the applicant must have a physical or mental disability that interferes with his or her employment, and (b) a reasonable possibility must exist that rehabilitative services will result in gainful employment.

Vocational evaluation is pivotal to the rehabilitation process. In conjunction with intake and referral information,

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** Present address: The School District of Greenville County, South Carolina evaluation data are used to identify disabilities and to determine whether or not an individual has a reasonable chance of getting and keeping a job. As a result, vocational evaluation has played a key role in determining eligibility for rehabilitation services and thus has become the component of the rehabilitation process with the most direct impact upon persons seeking employment services.

For some applicants of vocational rehabilitation services, the connection between evaluation and eligibility is straightforward. For instance, medical evaluations are frequently useful for identifying the medical or psychiatric treatment needed to reduce an individual's disability. Once the applicant has been determined to be eligible and appropriate services have been identified, the rehabilitation process can continue toward job placement and eventual closure. For many vocational rehabilitation applicants, however, evaluation practices do not always result in such precise eligibility and service outcomes. For individuals with severe disabilities such as mental retardation, cerebral palsy, and autism, vocational evaluation often results in ineligibility.

Given the supported employment mandate of the Rehabilitation Act amendments (P.L. 99-506), professionals in vocational rehabilitation, developmental disabilities, mental health and retardation, and special education will have to re-examine their vocational evaluation practices. Evaluation procedures that do not provide meaningful information related to planning effective programs for persons with severe handicaps will be of no help to these practitioners as they face the challenge of supported employment. When testing procedures do not result in training-related information, evaluation becomes nonfunctional in the larger rehabilitation process.

This chapter has three purposes: to describe the evolution of current evaluation procedures, to address the utility of current practices in the development of effective supported employment programs, and to recommend changes in evaluation and eligibility procedures. It is the authors' intent to provide the reader with suggestions that will be helpful in planning vocational evaluation activities that are closely related to supported employment training. We believe that vocational evaluation should remain an integral and useful part of the rehabilitation process.

Evolution of Current Vocational Evaluation Procedures

Service providers can choose from a wide variety of evaluation procedures to identify the employment training needs of persons with disabilities, including measures of general intelligence, educational achievement, motor dexterity, mechanical aptitude, occupational interest, personality traits, and work habits. Many of these procedures have been adapted from methods developed by early researchers in vocational evaluation. Current practice, therefore, cannot be adequately understood without examining the history of vocational evaluation.

Standardized intelligence, achievement, and aptitude tests have been used for vocational evaluation since World War I. It was not until World War II, however, that these measures gained widespread use, when approximately 14 million men underwent some form of achievement or aptitude testing to evaluate their suitability for various military jobs. The work of Robert L. Thorndike during World War II shaped the field of vocational evaluation, and his influence is still felt today.

Thorndike, who was the psychologist largely responsible for the development and administration of the Aviation Psychology Program of the Army Air Force, defined the goal of personnel testing as "selecting certain individuals from among the applicants for a job, or determining for which of two or more possible job categories a particular individual shall be assigned" (Thorndike, 1949, p. 4). This form of evaluation challenged the personnel psychologist to derive "insights and hypotheses as to the psychological functions required for success on the job" (p. 12). To accomplish this Thorndike suggested a rigorous method consisting of job analysis, selection and invention of testing procedures, preliminary tryout and refinement of instruments, validation of test procedures, combination of tests into a battery, and finally, systematic administration of the testing program. Thorndike's approach to vocational evaluation was analytical, objective, and empirical. He wrote, "The feature that distinguishes reputable work in personnel selection from that of the mass of self-styled 'psychologists,' 'personnel experts,' and other quacks is that the reputable worker in the field is continuously concerned with testing, reverifying, and improving the adequacy of his procedures" (p. 2). Some of the psychological functions that Thorndike and his colleagues identified as prerequisites for successful Army Air Force pilots were an understanding of mechanical principles, knowledge of general information, complex coordination, instrument comprehension, and arithmetic reasoning.

The approach to vocational evaluation developed by R. L. Thorndike was highly empirical. The procedures he used to develop, select, validate, and combine tests became known as the process of standardization (Neff, 1966). Because many of the characteristics Thorndike measured were related to both general and specialized psychological functions, Neff (1966) labeled this evaluation model the mental testing approach.

The Mental Testing Approach in the Private Sector

The mental testing approach to vocational evaluation developed and refined by Thorndike for the military was eventually adopted by business and industry, where prospective employees were evaluated with batteries of aptitude and achievement tests.

Test authors like George K. Bennett developed instruments designed to measure general vocational aptitudes. The Test of Mechanical Comprehension, Form AA (Bennett, 1947) became one of the most widely used instruments for testing job applicants. The major purpose of this testing was to measure the applicant's ability to perceive and understand physical laws and practical mechanical relationships. Bennett claimed that this aptitude was important for a wide variety of jobs. With this assertion, the field of vocational evaluation which had originated to select individuals for highly specialized jobs such as piloting aircraft, became oriented toward the prediction of general vocational success.

The vocational evaluation model which utilized standardized tests for predicting general vocational ability gained strength in the post-World War II era. Business and industry utilized a wide range of evaluation instruments to screen prospective employees for a variety of jobs. Many of these instruments, however, were a compilation of techniques used by the military to test ability for specialized jobs (Cronbach, 1960). For example, the Flanagan Aptitude Classification Tests were a battery of 21 tests, suggested by Air Force studies, that included measures of scale reading, carving skill, and tapping ability. The Guilford-Zimmerman Aptitude Survey, published in 1947, also contained measures found useful in Air Force classification (Guilford, 1947). Perhaps owing to its adoption by business and industry, the mental testing approach became the preeminent model of vocational evaluation. When education and rehabilitation professionals became involved in vocational evaluation, the mental testing approach was the methodology they selected.

The Mental Testing Approach in Education and Rehabilitation

The mental testing approach has been characterized as standardized testing to predict general vocational ability (Cobb, 1972; Gold, 1973; Halpern, Lehman, Irvin & Heiry, 1982; Neff, 1966). The mental testing model with its prediction orientation has been applied to the vocational evaluation of individuals in educational and rehabilitation settings, and many of the evaluation techniques in use throughout the country reflect this approach.

One of the first instruments developed for use in educational settings was the Differential Aptitude Tests (DAT) (Bennett, Seashore, & Wesman, 1947). Linn (1978) has called the DAT the Cadillac of multiple aptitude batteries. The DAT 9 battery consists of eight tests, including verbal reasoning, numerical ability, abstract reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling, and language usage. The tests that constitute the DAT were designed to facilitate the work of high school vocational guidance counselors as they advise students who are making career choices. Several reviewers have suggested that the DAT is one of the most thoroughly validated instruments of its kind (Cronbach, 1960; Linn, 1978; Mastie, 1976). Although disabled subjects were not included in the DAT standardization sample, the instrument is characteristic of the mental testing approach to vocational evaluation. In fact, the evaluation methodology and prediction orientation used by the DAT have been incorporated into many current systems used by education and rehabilitation professionals, including both the multi-aptitude batteries and the popular work sample systems used in many vocational evaluation programs.

The U.S. Employment Service has developed the Nonreading Aptitude Test Battery (NATB) for vocational evaluation of "educationally deficient" individuals. The NATB is a nonreading version of the most widely used multi-aptitude battery, the U.S.E.S. General Aptitude Test Battery (GATB) (Borgen, 1983). The NATB subtests correspond very closely to those of the DAT. NATB subtests include verbal ability, numerical ability, manual dexterity, clerical perception, form perception, spatial perception, general learning ability, motor coordination, and finger dexterity. It is interesting to note the similarities between the NATB, revised in 1981, and the DAT, which was developed in 1947. In fact, even some of the more work-oriented vocational evaluation systems still closely resemble the DAT.

The Valpar Component Work Sample System comprises 16 subtests (Botterbusch, 1980), many of which resemble subtests of the DAT. VALPAR subtests include independent problem solving, numerical sorting, money handling, clerical comprehension and aptitude, simulated assembly, size discrimination, electrical circuitry and print reading, small tools, upper extremity range of body motion, multilevel sorting, whole range of body motion, trilevel measurement, eye-hand-foot coordination, soldering and inspection, integrated peer performance, and drafting. Many of the VALPAR subtests focus on general work aptitudes, which is a defining feature of the mental testing approach to vocational evaluation.

Two extremely popular and widely used vocational evaluation techniques, the multi-aptitude test battery (e.g., NATB) and the work sample system (e.g., VALPAR) are directly related to the mental testing approach. Some similarities between current evaluation techniques and the traditional mental testing approach include: (a) a focus on general work abilities that are presumably elements of successful vocational adjustment, (b) a prediction orientation and purpose, and (c) a heavy reliance on standardized instruments. The aptitude, achievement, and work sample methods have found their way to the forefront of education and rehabilitation evaluation programs (Brolin, 1982; Phelps & McCarty, 1984). Proponents of the approach have suggested that the behaviors measured with aptitude and achievement batteries may be related to an individual's employability. For example, Brolin (1982) has said, "Academic skills in the areas of reading, writing, and mathematics play an important role in the determination of vocational potential" (p. 91). The capability of mental testing techniques, most of which were originally designed to screen nonhandicapped persons for highly specific jobs, to predict the general employment potential of persons with handicaps has been questioned repeatedly (Cobb, 1972; Gold, 1973, Menchetti, Rusch, & Owens, 1983; Schalock & Karan, 1979; Wolfensberger, 1967). Given these questions, the utility of the mental testing approach in vocational evaluation must be examined critically by education and rehabilitation professionals.

Utility of Current Vocational Evaluation Practices

There are several reasons why the mental testing approach has obtained widespread acceptance in the vocational evaluation of individuals with disabilities. Aptitude batteries, achievement tests, and work sample systems have been marketed aggressively by publishers. Many of the current vocational evaluation instruments have reported elaborate standardization and validation data (Field, Sink, & Cook, 1978; Flenniken, 1975; Hull & Halloran, 1975; Jones & Lassiter, 1977). These reports, however, have not served to persuade the critics of the mental testing approach or similar instruments used to evaluate persons with handicaps.

Neff (1966) has pointed out that although the mental testing approach "seems like a triumph of empirical logic, one may be almost astonished to discover that even the most impeccably developed tests have respectably high reliabilities but disappointingly low predictive validity" (p. 55). Other researchers have pointed out that many of the standardized measures used for vocational evaluation of persons with handicaps have not been sufficiently validated for this purpose (Gold, 1973; Wolfensberger, 1967). Finally, some critics have suggested that the purpose of many vocational evaluation programs, namely the prediction of general employability, may be unrelated to the more relevant goal of identifying the specific training needs of persons with handicaps (Cobb, 1972; Halpern et al., 1982; Menchetti et al., 1983; Schalock & Karan, 1979). In order to judge the utility of current vocational evaluation practice for supported employment, one must examine these criticisms.

Criticisms of Current Evaluation Practices

Many professionals have pointed out that there has been a lack of empirical evidence showing that scores on instruments currently used in vocational evaluation programs are related significantly to the employability of persons with handicaps (Browning & Irvin, 1981; Cobb, 1972; Gold, 1973; Menchetti et al., 1983; Schalock & Karan, 1979; Wolfensberger, 1967). Some of these individuals have criticized the validation research, whereas others have questioned the evaluation methodology and purpose.

Twenty years ago, Wolfensberger (1967) criticized the validation research for several reasons, including poor methodology, lack of cross-validation studies, failure to analyze training variables, and the assumption that the criteria defining successful employment were the same for all persons. Wolfensberger's criticisms emphasized that training variables play a critical role in assessing the employability of persons with handicaps. These variables are typically not taken into account by current evaluation techniques, which suggested to many in the field that a vocational evaluation approach that predominantly measured general abilities, achievement, aptitudes, and other manifestations of prior learning was nonfunctional. This belief led to a movement to shift the purpose and orientation of vocational evaluation for persons with handicaps.

In an important work entitled, The Forecast of Fulfillment, Cobb (1972) stated that there are two basic orientations to vocational evaluation, the prediction orientation and the counseling orientation. A major goal of evaluation approaches with a prediction orientation is the measurement of variables that presumably forecast future employment potential. Approaches with a counseling orientation attempt to measure variables that can be used to identify the specific training needs of persons with handicaps. Techniques of evaluation with a counseling orientation can be used for the curriculum development and instructional planning needed to improve vocational training opportunities for individuals with handicaps. Many professionals have suggested that Cobb's counseling orientation is the only relevant vocational evaluation approach.

Gold (1973) has criticized evaluation techniques designed primarily to predict a person's potential for employment, suggesting that the validity of instruments with a prediction orientation was statistically significant in a research context but was lacking in practical applicability. Gold was referring to the numerous studies that correlated scores on newly developed aptitude batteries and work samples with measures on other, more established instruments (such as Distefano, Ellis, & Sloan, 1958; Tobias, 1960; Wagner & Hawver, 1965).

Gold pointed to three serious problems with this approach to validation. First, many of the criteria measures, that is, the scores on the more established tests, had not established their own validity and reliability with handicapped populations. Gold also pointed out that any validation study that correlated scores on a newly developed test with current scores on similar, but more established tests was investigating concurrent validity. Cronbach (1960) suggested that concurrent validation data have limited generality when tests are used to make predictions regarding potential performance. Finally, Gold re-emphasized that vocational evaluation with a prediction orientation has little relevance to the training needs of individuals with handicaps. For example, determining that a person with mental retardation has a low IQ, or scores low on a general aptitude battery, Gold argued, reveals nothing about how to plan an appropriate course of vocational training for that individual. In fact, the poor performance on aptitude tests by persons with handicaps is often used to justify their exclusion from the very training they require. Like Wolfensberger (1967), Gold (1973) called for a shift in the focus of vocational evaluation away from a prediction orientation and toward a training facilitation orientation.

The professional call for a change in the focus of evaluation continued. Schalock and Karan (1979) called for an approach that emphasized a close, interactive relationship between evaluation and training activities, an approach they termed edumetric because its focus is on the measurement of education and training needs. Halpern, Lehman, Irvin, and Heiry (1982) differentiated between traditional and contemporary evaluation approaches and suggested that traditional measures are useful when the goal is to identify prior learning such as aptitudes, interests, and traits. Halpern et al. (1982) pointed out, however, that when one is evaluating the vocational needs of persons with handicaps, traditional information is often redundant. A contemporary evaluation approach which measures applied work performance and social behavior in the context in which such performance is expected, would better facilitate identification of an individual's training needs and increase his or her access to training opportunities. Halpern et al. (1982) suggested the emergence of contemporary evaluation techniques as the most functional approach to vocational evaluation. Most recently, Kokaska and Brolin (1985) stated that "norm-referenced tests that compare a student's performance against the norm are not the most appropriate method of assessment to ascertain the individual's competence. In our opinion, a type of criterion-referenced test that assesses the student's mastery of competence in specific areas is more useful" (p. 281).

Supported Employment: New Challenges for Vocational Evaluation

General agreement is emerging among professionals that vocational evaluation services for persons with handicaps should emphasize the identification of individual training needs over measurement of prior learning (e.g., achievement, general aptitudes, work habits). Evaluation techniques that focus on prior learning highlight the limitations of the individual. Proponents of supported employment have collected data that suggest the difficulties many persons with severe handicaps experience when seeking to be competitively employed cannot be solely attributed to their limitations (Bates, 1986; Bellamy, Rhodes, Bourbeau, & Mank, 1986; Rusch & Mithaug, 1980; Vogelsberg, 1984; Wehman, 1981). Instead, these professionals have pointed out that the employment problems faced by persons with severe handicaps are, in part, a result of ineffective services and the larger societal employment context. In fact, the concept of supported employment is based upon research findings that corroborate this position. First, researchers have pointed to national studies of the outcomes attained by sheltered work programs, which serve the majority of persons with handicaps (General Accounting Office, 1980; Greenleigh Associates, 1975; U.S. Department of Labor, 1977, 1979; Whitehead, 1981). These studies have shown that sheltered services have been largely ineffective in providing reasonable wages for their workers, in moving them to higher levels of productivity, and in placing them into the competitive labor force. Second, supported employment proponents have indicated that there is conclusive evidence of the productive capacity of individuals with severe handicaps. Using behavioral training techniques and a systematic approach to working with community employers, researchers have demonstrated that persons with handicaps can learn the skills needed to earn wages significantly above the sheltered workshop average (Rusch, 1986). Based on these data, supported employment programs have proliferated. All of these programs assume that persons with handicaps can become productive members of our society.

Many of the empirically based tenets of supported employment have had a direct impact upon vocational evaluation. Given the focus on systematic training, supported employment evaluation efforts have been designed to identify needed training resources and individual training objectives. Furthermore, with the emphasis on community employment alternatives, vocational evaluators have focused their measures toward community expectations as these evaluations bear a close relationship to the needs of local labor markets (Pancsofar, 1986). Finally, vocational evaluation efforts have facilitated the data-based instructional decisions used in behavioral training programs. The relationship of these supported employment tenets to vocational evaluation are summarized in Table 1.

Some of the guiding tenets of supported employment have begun to be incorporated into vocational evaluation policy. The Vocational Evaluation and Work Adjustment Association (VEWAA) has suggested that vocational evaluation must benefit both the service provider and the client by providing information that facilitates the development of a plan of action (Schneck, 1981). Recent legislation (e.g., PL 99-506 and the Carl D. Perkins Vocational Education Act) has placed demands on local rehabilitation and education agencies to conduct evaluation that results in both identification of the vocational needs of persons with handicaps and increased access to needed services. Kokaska and Brolin (1985) have suggested that the only reasonable purpose for vocational evaluation is to facilitate the career development of the individual. According to these authors, the major function of evaluation is that "the individual's strengths and weaknesses can be discerned so that the IEPs and the Individualized Written Rehabilitation Plans (IWRPs) can be planned, and individual and group progress can be monitored" (p. 281). The remainder of this chapter addresses the need for evaluation techniques to meet the challenges presented by supported employment.

Table 1

Tenets of the Supported Employment Movement Related to Vocational Evaluation

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- The purpose of evaluation is to facilitate the identification of individual training needs and resources.

- Measures should be community referenced and interpretation of performance must assist instructional decision making.

- Successful vocational adjustment is related to training variables and the employment context.

Evaluation in Supported Employment

For many years, the multi-aptitude battery and work sample techniques have dominated the field of vocational evaluation. Although these techniques have been used to measure a variety of general aptitudes and skills, the relationship of these variables to the successful vocational adjustment of individuals with handicaps has not been established empirically. In fact, recent research has suggested that productivity is more closely associated with service provision. Services, including systematic instruction, frequent contact with employers, and the availability of long-term support, have defined supported employment. Education and rehabilitation professionals interested in developing supported employment programs must adapt their current evaluation and eligibility procedures to the outcome-oriented approach of supported employment.

Certain features of supported employment will require the use of unique vocational evaluation methods. Given the behavioral orientation of supported employment, evaluation efforts must result in information that can be used to plan individual training programs, suggest alternative training approaches, and determine whether outcomes are within an acceptable range of performance. The community employment focus of supported employment will also have direct implications for vocational evaluation. In order to facilitate community job placement, vocational evaluation measures must be community referenced; that is, the instruments should be closely related to local labor market needs. Finally, the long-term follow-up services associated with supported employment will require evaluation techniques that are continuous, in order to ensure that retraining can be provided when needed and that employer satisfaction is documented and monitored.

Ecological Analysis

One evaluation technique that has been very useful to supported employment programs is ecological analysis. Applied to vocational evaluation, ecological analysis is the identification and measurement of actual skills required for employment. Wehman, Renzaglia, and Bates (1985) have defined ecological analysis as a systematic approach to identifying skills that have a high priority for a person to learn. In employment settings, ecological analysis has also been called job analysis (Rusch & Mithaug, 1980; Schutz & Rusch, 1982). In supported employment, job analysis has been used as a strategy for conducting an empirical analysis of the employment ecology.

One example of an empirical approach to identification of high priority employment skills is the Job Skills Inventory (Belmore & Brown, 1978). The Job Skills Inventory analyzes the employment ecology with a three-step strategy or process. First, the general vocational and social skill requirements of a specific job are identified. Second, workers employed in the target job are directly observed and each previously identified skill is broken down into its component behaviors, a technique known as task analysis. Finally, critical factors such as an individual's transportation and independent living skills are identified. These factors are important to long-term job success and must be evaluated so that skill training and supportive services can be provided when necessary.

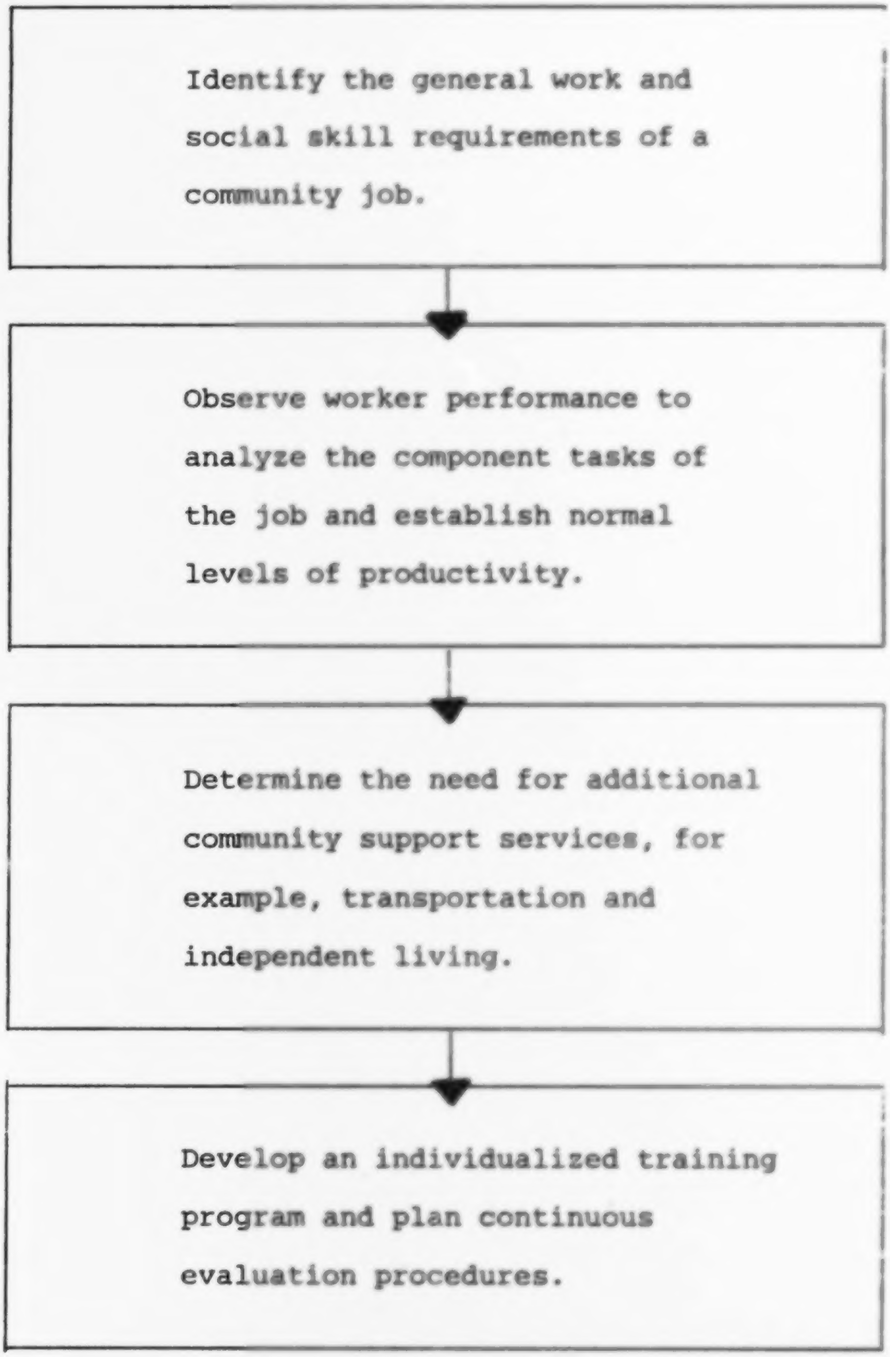
The information obtained with the Job Skills Inventory is particularly relevant to supported employment. The work, social, and community skills identified through the inventory process can be easily translated into training objectives. Using behavioral observation techniques and evaluation of individual performance, a method for determining intervention effectiveness and planning needed program adjustments can be designed. Task analysis data collected during the inventory process can be used to establish normal levels and rates of worker productivity. This information is important because it allows evaluators and trainers to judge when a target employee's work performance is acceptable. The job inventory strategy assures that skills are referenced to the local labor market and have a high probability of being valued by community employers. Finally, the job inventory process can be used to develop evaluation instruments such as skill checklists for continuous measurement of worker performance. The inventory process represents a promising technique for supported employment. Figure 1 depicts the job inventory process, culminating in the development of an individualized training plan.

Another evaluation instrument based upon an ecological analysis of employment opportunities is the Vocational Assessment and Curriculum Guide (VACG) (Rusch, Schutz, Mithaug, Stewart, & Mar, 1982). The VACG includes a variety of general work and social skills based on an empirical analysis of job demands. Rusch, Schutz, and Agran (1982) surveyed employers in service and light industries to determine the skill demands of their entry-level jobs. The results of this survey provided the item pool for the VACG.

The VACG has been designed as a behavior-rating scale that provides a measure of the vocational and social skills of persons with handicaps. The VACG comprises ten domains: attendance/endurance, independence, production, learning, behavior, communication, social skills, grooming/eating, reading/ writing, and math. There are 66 items on the VACG, each beginning with the phrase, "Does the worker," followed by a description of the behavior being assessed. Several possible responses are provided that indicate levels of performance displayed by the worker. Raters are instructed to select the phrase that best describes the individual's current level of functioning. The VADG was designed to be used by classroom teachers, rehabilitation counselors, adult service providers, parents, and paraprofessionals to determine an individual's general skill level in relation to standards suggested as important for success in such occupations as the food service industry, janitorial work, and light industrial occupations.

Figure 1

The Job Inventory Process



Identify the general work and social skill requirements of a community job.

Observe worker performance to analyze the component tasks of the job and establish normal levels of productivity.

Determine the need for additional community support services, for example, transportation and independent living.

Develop an individualized training program and plan continuous evaluation procedures.

The primary purpose of the instrument is to assist in the job inventory process by providing a starting point for the development of a supported employment program in food service, janitorial, or light industrial occupations. The VACG also provides functional training objectives for school-aged students with handicaps as they move toward competitive employment opportunities. The VACG has proven to be a useful evaluation instrument in ongoing supported employment programs.

Vogelsberg (1986) has described the role of the VACG in supported employment evaluation in Vermont. (The VACG is one of two instruments utilized in the evaluation phase of the Vermont program; the other is a locally developed tool, the Individual Skill Inventory.) The VACG is administered to provide curriculum recommendations for individuals who cannot be immediately employed. The recommendations, in the form of specific training objectives, are forwarded to adult service and local education agencies for incorporation into an individual's program plan. The Individual Skill Inventory provides the structure for completing the job inventory process for specific positions in the community. Vogelsberg (1986) has stressed that factors such as transportation, parental support, and agency cooperation are also evaluated and play an important role in identifying the best candidates for supported employment.

Menchetti and Rusch (1987) have investigated selected psychometric properties of the VACG. These included reliability issues of score stability, internal consistency, and interrater agreement. The capability of VACG domain scores to discriminate between groups of handicapped and nonhandicapped workers was also examined as a validity concern. The reliability data obtained for the VACG also compared favorably with similar information reported for other vocational rating scales. The VACG validation data indicated that domain scores differentiate between groups of handicapped and nonhandicapped workers employed in service occupations.

Studies investigating the psychometric properties of instruments with an ecological analysis orientation are important for a number of reasons. Research of this kind signals a return to the rigorous scientific regimen of test development and validation suggested by pioneers in the field such as R. L. Thorndike. Renewed emphasis on empiricism will enhance the field of vocational evaluation and improve the adequacy of measurement techniques.

The job inventory process and instruments such as the VACG, which are based on an empirical analysis of the employment ecology, provide a strategy for the development of useful evaluation procedures. Professionals interested in providing effective supported employment services must use this strategy in their evaluation programs.

Vocational Evaluation for Supported Employment

Meeting the challenge of supported employment will require an evaluation program that is designed to meet the needs of local labor markets and the individual seeking a job. Several steps must be followed by evaluators to assure that the data they obtain are functionally related to community work opportunities and the employment needs of individuals with handicaps. These include evaluating local labor markets, evaluating potential employees' vocational and related skill needs, developing individualized training plans, continously monitoring program efforts, and evaluating employer satisfaction on a regular basis.

Evaluating Local Labor Markets

An initial step in the development of supported employment evaluation programs should be the identification of the needs of community employers. Evaluators can utilize techniques such as employer surveys and job analysis (Martin, 1986) to assess target work environments (e.g., restaurants, factories, offices.) The information obtained can be used to specify both general and specific skill requirements of locally available jobs. If this step is not practical at the local level, instruments such as the VACG will provide useful information about the skill requirements of service and light industrial occupations.

Evaluating Individual Needs

After obtaining information about marketable community work skills, the evaluator must turn his or her attention to the individual. Evaluators should determine a potential employee's current skill level in relation to the community-referenced standards identified with local surveys or with the VACG. Locally developed skill checklists or the VACG Inventory can be used for this purpose. In addition, employment-related factors such as transportation, medical needs, or economic considerations must be assessed. Usually, prior assessment summaries or school records will contain this important information.

Plan Individual Training

Training objectives must be specified for each individual seeking supported employment. Many school programs have begun writing individualized transition plans (ITPs) for high school students. Vocational rehabilitation professionals utilize an individualized written rehabilitation plan or IWRP to specify services. The ITP and IWRP provide vehicles for specifying training objectives related to supported employment. Vocational evaluators can write training objectives for each of the skills included on a locally developed skill checklist or use the VACG Curriculum Guide to target objectives for inclusion on an individual's program plan.

Continously Monitor Progress

In supported employment programs, the evaluator's role does not end with the development of a program plan. Planning and training efforts must be closely connected and mutually beneficial. Individualized program plans (i.e., ITPs, IWRPs) should include recommendations for continous monitoring of worker performance. Behavioral observation techniques and repeated measures experimental designs such as the multiple baseline and changing criterion are useful tools for the analysis of work behavior (Agran, 1986). Vocational evaluators must be familiar with these techniques if their efforts are to facilitate the provision of effective services. A discussion of behavioral assessment methodology is beyond the scope of this chapter, but the reader may consult one of the excellent sources of information on this topic (Agran, 1986; Bates & Hanson, 1983; Kazdin, 1982, Kratochwill, 1978; Rusch & Mithaug, 1980; Wehman, 1981). Continous assessment of worker performance is needed to facilitate supported employment decisions such as the need to provide retraining and the appropriate time to withdraw intervention procedures. This kind of evaluation is crucial to the success of supported employment programs.

Evaluating Employer Satisfaction

The final step in evaluation should be an assessment of the employer's satisfaction with supported employment. Employers are important participants in supported employment, and the most successful programs have evaluated their perception of training goals, procedures, and outcomes. Information regarding employer satisfaction enables programs to be responsive to the needs of the local labor market and increases the likelihood that these markets will be accessible to persons with handicaps.

Recommended Changes in Current Evaluation and Eligibility Procedures

We have attempted to build a case for change in current rehabilitation and education evaluation procedures. In addition, recommendations and examples of a more functional approach to vocational evaluation of persons with handicaps have been presented. There is no doubt that, once put into widespread practice, these functional evaluation techniques will also replace traditional ideas about eligibility for employment services. In summation, we suggest the following changes in the current procedures used to determine whether or not an individual has potentional for gainful employment.

1. Vocational evaluation techniques must move away from methods that measure general aptitudes and work habits that have never been shown to be related to the successful vocational adjustment of individuals with handicaps.

2. Service providers must abandon eligibility procedures based upon invalid predictions of general employment potential.

3. Vocational evaluation techniques must be based upon an empirical analysis of the local labor market. Techniques and instruments such as a job inventory and the VACG may prove useful.

4. Vocational evaluation efforts must result in information that facilitates program planning, is community referenced, and assists in instructional decision making. Evaluation in supported employment programs must be continous to assure that retraining can be provided when needed and that employer satisfaction can be measured.

5. Service providers must base eligibility determination for supported employment programs on job inventory data, job availability, presence of supportive family members, transporation factors, and the economic consequences of community employment on the target individual.

6. Vocational evaluation professionals must rediscover the rigorous empirical methods suggested by the pioneers to develop new techniques for use with handicapped persons.

References

Agran, M. (1986). Analysis of work behavior. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp.153-164). Baltimore, MD: Paul H. Brookes.

Bates, P.E. (1986). Competitive employment in southern Illinois: A transitional service delivery model for enhancing competitive employment outcomes for public school students. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp.51-64). Baltimore, MD: Paul H. Brookes.

Bates, P.E., & Hanson, H.B. (1983) Behavioral assessment. In J.L. Matson & S.E. Breuning (Eds.), Assessing the mentally retarded (pp.27-63). New York: Grune & Stratton.

Bellamy, G.T., Rhodes, L.E., Bourbeau, P.E., & Mank, D.M. (1986). Mental retardation services in sheltered workshops and day activity programs. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp.257-273). Baltimore, MD: Paul H. Brookes.

Belmore, K., & Brown, L. (1978). A job skill inventory strategy designed for severely handicapped potential workers. In N.G. Haring & D.D. Bricker (Eds.), Teaching the severely handicapped (Vol. 3, pp. 223-262). Columbus, OH: Special Press.

Bennett, G.K. (1947). Test of mechanical comprehension, Form AA manual. New York: Psychological Corporation.

Bennett, G.K., Seashore, H.G., & Wesman, A.G. (1947. Differential aptitude tests manual. New York: Psychological Corporation.

Borgen, F.H. (1983). A review of the USES General Aptitude Battery. In J.T. Kapes & M.M. Mastie (Eds.), A counselor's guide to vocational guidance instruments (pp.42-46). Falls Church, VA: The American Personnel and Guidance Association.

Botterbusch, K.F. (1980). A comparison of commercial vocational evaluation systems. Menomonie, WI: Stout Vocational Rehabilitation Institute, University of Wisconsin-Stout.

Brolin, D.E. (1982). Vocational preparation of persons with handicaps (2nd. ed.). Columbus, OH: Charles E. Merrill.

Browning, P., & Irvin, L.K. (1981). Vocational evaluation, training, and placement of mentally retarded persons. Rehabilitation Counseling Bulletin, 25, 374-408.

Cobb, H.V. (1972). The forcast of fulfillment. New York: Teachers College Press.

Cronbach, L.J. (1960). Essentials of psychological testing. New York: Harper & Row.

Distefano, M.K., Ellis, N.R., & Sloan, W. (1958). Motor proficiency in mental defectives. Perceptual and motor skills, 8, 231-234.

Field, T.F., Sink, J.M., & Cook, P. (1978). The effects of age, IQ, and disability on performance on the JEVS system. Vocational Evaluation and Work Adjustment Bulletin, 11, 14-22.

Flenniken, D. (1975). Performance on the 1973 revised Philadelphia JEVS work sample battery. Vocational Evaluation and Work Adjustment Bulletin, 8, 35-47.

General Accounting Office (1980). Better reevaluations of handicapped persons in sheltered workshops could increase their opportunities for competitive employment. Washington, DC: General Accounting Office.

Gold, M. (1973). Research on the vocational rehabilitation of the retarded: The present, the future. In N. Ellis (Ed.). International review of research in mental retardation (Vol. 6, pp. 97-147). New York: Academic Press, Inc.

Greenleigh Associates (1975). The role of the sheltered workshop in the rehabilitation of the severely handicapped. Report to the Department of Health, Education, and Welfare, Rehabilitation Services Administration, New York.

Guilford, J.P. (1947). Printed classification tests. Washington, DC: Government Printing Office.

Halpern, A.S., Lehmann, J.P., Irvin, L.K., & Heiry, T.J. (1982). Contemporary assessment for mentally retarded adolescents and adults. Baltimore: University Park Press.

Hull, M., & Halloran, W. (1976). The validity of the Nonreading Aptitude Test Battery for the mentally handicapped. Educational and Psychological Measurement, 36, 547-552.

Jones, C., & Lassiter, T. (1977). Worker non-worker differences on three VALPAR component work samples. Vocational Evaluation and Work Adjustment Bulletin, 10, 23-27.

Kazdin, A.E. (1982). Single-case research designs. New York: Oxford University Press.

Kokaska, C.J., & Brolin, D.E. (1985). Career education for handicapped individuals (2nd ed.). Columbus, OH: Charles E. Merrill.

Kratochwill, T.R. (Ed.) (1978). Single-subject research: Strategies for evaluating change. New York: Academic Press.

Linn, R.L. (1978). Review of the differential aptitude tests. In O.K. Buros (Ed.) The eighth mental measurements yearbook. Highland Park, N.J.: The Gryphon Press.

Martin, J.E. (1986). Identifying potential jobs. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp.165-185). Baltimore, MD: Paul H. Brookes.

Mastie, M.M. (1976). Test review: Differential Aptitude Tests, Forms S and T with career planning program. Measurement and Evaluation in Guidance, 9, 87-95.

Menchetti, B.M., & Rusch, F.R. (1987). An analysis of select psychometric properties of the Vocational Assessment and Curriculum Guide. (this volume)

Menchetti, B.M., Rusch, F.R., & Owens, D.M. (1983). Vocational Training. In J.L. Matson & S.E. Breuning (Eds.), Assessing the mentally retarded (pp. 247-284). New York: Grune & Stratton.

Neff, W.S. (1966). Problems of work evaluation. The Personnel and Guidance Journal, 44, 53-66..

Pancsofar, E.L. (1986). Assessing work behavior. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp. 93-102). Baltimore, MD: Paul H. Brookes.

Phelps, L.A., & McCarty, T. (1984). Student assessment practices. Career Development for Exceptional Individuals, 7, 30-39.

Rusch, F.R. (1986). Competitive employment issues and strategies. Baltimore, MD: Paul H. Brookes.

Rusch, F.R., & Mithaug, D.E. (1980). Vocational training for mentally retarded adults: A behavior analytic approach. Champaign, IL: Research Press.

Rusch, F.R., Schutz, R.P., & Agran, M. (1982). Validating entry level survival skills for service occupations: Implications for curriculum development. Journal of the Association for the Severely Handicapped, 8, 32-41.

Rusch, F.R., Schutz, R.P., Mithaug, D.E., Stewart, J.E., and Mar, D.W. (1982). Vocational assessment and curriculum guide. Seattle, WA: Exceptional Education.

Schalock, R.L., & Karen, O.C. (1979). Relevant assessment: The interaction between evaluation and training. In G.T. Bellamy, G. O'Connor, & O.C. Karan (Eds.). Vocational rehabilitation of severely handicapped persons. Baltimore: University Park Press.

Schneck, G.R. (1981). Program improvement in vocational assessment for the handicapped. In R.A. Stodden (Ed.), Vocational assessment: Policy paper series: Document 6.

Urbana-Champaign: University of Illinois, Leadership Training Institute.

Schutz, R.P., & Rusch, F.R. (1982). Competitive employment: Toward employment integration for mentally retarded persons. In K. Lynch, W. Kierman, & T.J. Stark (Eds.), Prevocational and vocational education for special needs youth: A blueprint for the 1980's (pp. 133-159). Baltimore, MD: Paul H. Brookes.

Thorndike, R.L. (1949). Personnel selection: Test and measurement techniques. New York: John Wiley & Sons, Inc.

Tobias, J. (1960). Evaluation of vocational potential of mentally retarded young adults. Training School Bulletin, 56, 122-135.

U.S. Department of Labor (1977). Sheltered workshop study: A nationwide report on sheltered workshops and their employment of handicapped individuals (Vol. I). Washington, DC: U.S. Department of Labor.

U.S. Department of Labor (1979). Study of handicapped clients in sheltered workshops (Vol. II). Washington, DC: U.S. Department of Labor.

Vogelsberg, R.T. (1984). Competitive employment programs for individuals with mental retardation in rural areas. In P. Wehman (Ed.), Proceedings from the national symposium on employment of citizens with mental retardation. Richmond, VA: Virginia Commonwealth University.

Vogelsberg, R.T. (1986). Competitive employment in Vermont. In F.R. Rusch (Ed.), Competitive employment issues and strategies (pp.35-49). Baltimore, MD: Paul H. Brookes.

Wagner, E.E., & Hawver, D.A. (1965). Correlations between psychological tests and sheltered workshop performance for severely retarded adults. American Journal of Mental Deficiency, 69, 685-691.

Wehman, P. (1981). Competitive employment: New horizons for severely disabled individuals. Baltimore, MD: Paul H. Brookes.

Wehman, P., Renzaglia, A., & Bates, P.E. (1985). Functional living skills for moderately and severely handicapped individuals. Austin, TX: Pro-Ed.

Whitehead, C. (1981). Final report: Training and employment services for handicapped individuals in sheltered workshops. Washington, DC: Office of Social Services Policy, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services.

Wolfensberger, W. (1967). Vocational preparation and occupation. In A.A. Baumeister (Ed.), Mental retardation. Chicago: Aldine.

The Use of Standardized Assessment in Supported Employment

Lizanne DeStefano

The widespread implementation of supported employment programs across the country has led to concern in the field about the most useful and appropriate assessment strategy to be used in supported employment settings. Traditionally, vocational training programs have relied upon standardized techniques that combine aptitude tests, interest inventories, and norm-referenced instruments to generate individual profiles of vocational performance and potential (Gaylord-Ross, 1985). Although such instruments have proven useful, there is some question about their appropriateness for individuals with severe handicaps, the primary target group for supported employment. This concern has led to the current move toward a contemporary assessment approach that relies heavily upon situational assessment, ecological inventories, and criterion-referenced measures (Halpern, Lehman, Irvin, & Heiry, 1982; Menchetti, Rusch, & Owens, 1983).

This author takes the position that despite the presence of unique population characteristics, both traditional and contemporary assessment techniques contribute valuable information for decision making and documentation within the

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supported employment model. The task that service providers face is to devise an assessment package that adopts the best of both traditional and contemporary approaches. The package should be time and cost efficient and should provide information that is maximally useful for (a) identification of the target population, (b) program planning and placement, (c) monitoring worker progress, and (d) program evaluation (Lynn & DeStefano, 1986).

This article presents a number of standardized techniques, discusses their strengths and weaknesses for use with individuals with severe handicaps, and gives some guidelines for the selection and use of standardized tests in supported employment. For our purposes we shall define a standardized test as either a norm- or criterion-referenced instrument for which reliability, validity, and administration procedures have been well documented. Although this paper focuses on the use of standardized tests, it should be made clear that these tests constitute only one part of the assessment data to be collected. No diagnostic planning or placement decision should be made on the basis of standardized test data alone. Situational assessment holds an equally important role in completing the assessment picture.

Why Use Standardized Tests?

Situational assessment, observation of performance on the job and employer/co-worker evaluation provide a great deal of the situation-specific information that is necessary for making decisions and evaluating the success of a supported employment placement. Standardized assessment instruments complement these contemporary methods by providing generalized information that can be used across setting, across individuals, and across time. The comparative capability of standardized test information makes it useful in obtaining initial information about a worker, in describing the population served by supported employment, and in evaluating the impact of supported employment on an individual's adaptive functioning and overall quality of life. These uses will be discussed below.

Regardless of their orientation, all approaches to training share the need for some preliminary information about the individual to be trained. The use of standardized instruments offers the advantage of providing descriptive information about an individual across a number of competency areas. The information can be obtained in a few hours, and performance is summarized in standardized scores, percentile ranks, and age equivalents, which are easily communicated to the educational, vocational, and rehabilitation personnel involved in the process of planning for training. These standardized scores are obtained by comparing the examinee's performance with the average performance of persons in the standardization sample. In many instances it may be of interest to compare the results with those of a cohort made up of nonhandicapped individuals.

In other instances it may be more valuable to compare the examinee's performance with that of individuals with similar handicaps. For example, it may be helpful to compare an individual's scores on a vocational skills inventory with local production norms for nonhandicapped co-workers in addition to production rates of enclave members with handicaps. Using both of these comparisons, a job coach can anticipate the level of assistance necessary to attain maximum productivity. Many standardized tests offer both of these options as aids to interpreting individual performances. Administration of a short battery of standardized tests upon entry to a program can quickly identify skill areas where additional inquiry is needed in the form of observation, situational assessment, ecological inventories, or interview.

A comprehensive description of the population served is an essential element of program evaluation, replication, and dissemination. Standardized test data can be used to summarize the levels of functioning and skill levels of workers in a supported employment program, so that persons unfamiliar with the program can quickly get a sense of the severity of the disability served and of the relevance of the program to their own client group.

Standardized tests also offer the advantage of reliability and validity documentation, which not only provides a means of interpreting the results of these tests, but show their limitations and the degree to which they are consistent across time and across testers. Administration procedures and materials are outlined clearly so that the tests are given the same way each time. With these assurances it is possible to compare data from one administration with data from another. In this way, standardized tests can be used in a repeated-measures fashion to assess change or stability in a particular characteristic over time or as a result of an intervention. Obviously, the most logical way to assess the effectiveness of a supported employment program is to look at job tenure, wages and benefits earned, and employer satisfaction. It is desirable, however, to assess the broader impact of participation in supported employment by examining chnages in adaptive functioning, socialization, and lifestyle satisfaction. Standardized tests serve as one way to measure change in these contructs. Change can be measured on an individual basis to provide information on how effectively an individualized rehabilitation or vocational service plan is meeting its goals and to suggest areas for future planning. Longitudinal data can also be collected and summarized for all workers in a supported employment program as a measure of overall program effectiveness. Data from similar standardized test batteries can be used in a comparative analysis of many supported employment programs or can be aggregated and used to represent the characteristics of the population served collectively by supported employment programs in a state or region of the country.

Although standardized tests can contribute significantly to understanding and monitoring an individual worker or an entire supported employment program, there are many considerations in selecting tests that are both appropriate and maximally useful. In the next section I discuss the usefulness of several commercially available standardized tests in a supported employment program.

Guidelines for the Selection of Standardized Tests

There are several guidelines that should be followed when selecting one standardized test over another. The following guidelines are intended to help structure selection. One of the first considerations relates to why a test is used. The content of the test should be clearly related to the purpose of the test. For example, if a test of adaptive behavior is needed to obtain information upon level of community integration, it should be determined that a substantial number of items on the test are related to community integration and that those items are of the type that are relevant for the individual. It is not enough to accept the test label or publisher's descriptions as accurate accounts of test content. Personal inspection is the surest way to determine if test content meets assessment needs.

Although the characteristics of the standardization sample are important to consider in all test selection, nowhere is this information more important than in the use of tests with special populations. First, the extent to which members of the special population were included in the standardardization sample should be determined, and information should be available regarding their performance in terms of norms and standard error of measurement. If no members of the special population were included in the standarization sample, it may be difficult to interpret assessment findings accurately.

Information about the reliability and validity of the test should be stated clearly in the examiner's manual or in published research. Inter-rater, test-retest, alternate forms, and internal consistency reliability data should be provided for the entire norming group as well as for any special populations. Information about validity should include information from studies that include correlational analyses with other standardized measures, factor analytic studies, discriminative analyses, or studies of the ability of the test to predict status on some outcome variable. Again, validity information for the special population that is relevant to the assessment purposes is highly desirable. Documentation of the validity of a test is important because it provides evidence that a test actually measures what it purports to measure or that it is useful for its intended purpose.

The time necessary to administer the test should be considered in terms of the importance of the information gained. Since the primary goal of any supported employment program is to obtain and maintain employment, any assessment program that interferes with that process and does not contribute information sufficient to warrant that disruption is inappropriate. For example, if workers who are placed must miss work to complete follow-up assessment for evaluation purposes, something is in error. The fact that a worker is working provides greater evidence regarding the success of the program than gain scores on a standardized measure.

Any assessment done in the employment environment should not disrupt that environment. The information gained should be obtained through routine disruptions (e.g., during breaks, before work, after work), or during scheduled brief periods.

Each standardized instrument has specific requirements for the training of individuals who will be administering it. Personnel with the appropriate qualifications should be available for sufficient time periods to administer, interpret, and report test findings.

Standardized Tests and the Constructs They Measure

Because the successful placement of an individual into an integrated work setting depends upon a multitude of interrelated personal and situational variables, the range of personal skills and attributes to be assessed with standardized measures is equally broad. Linn and DeStefano (1986) reviewed assessment practices of more than 100 federally funded transition programs and identified 12 areas of assessment common to the majority of these projects: general ability/intelligence, adaptive behavior, vocational skill, career interests and awareness, language, social skills, academic skills, special abilities, survival skills, daily living skills, motor skills/dexterity, and lifestyle/consumer satisfaction. In a subsequent study (DeStefano & Linn, 1987) these 12 areas were consolidated into eight broad categories: general ability/intelligence; adaptive behavior; vocational skills; career interest and awareness; language; academic achievement; special abilities; and lifestyle satisfaction. (Because of its multifaceted definition the construct of adaptive behavior has been used to subsume the categories of social skills, daily living skills, and survival skills in the new categorization scheme.)

These eight areas will be used as the framework for a discussion of commercially available standardized tests. An ideal test battery should include measures in any area that is relevant to the functioning level and employment options of the individual. Limited resources may necessitate restricting assessment to those areas of highest priority dictated by program characteristics or client needs. Program personnel should review instruments from several areas in combination with each other to design a test battery or a set of batteries that best meet the identification, placement, planning, monitoring, and evaluation needs of the program. The following overviews each of the eight assessment areas.

General Ability/Intelligence

Intelligence testing began in the United States in the early 1900s and has played an important role in education and psychology from that moment forward. At some point in their lives most individuals with handicaps have taken an intelligence test. Most often the test has been used diagnostically to assign to the individual some educational or psychiatric description such as learning disabilities, mental retardation, or neurological impairment, or to substantiate the original diagnosis during periodic reviews. Out of administrative necessity, intelligence scores have come to be used as criteria for the provision or denial of services. It is often this gatekeeping function of intelligence testing that is emphasized at the expense of its equally important identification and informational capabilities. These latter functions hold the most relevance for supported employment programs.

Supported employment is a new day option that is targeted for persons with severe handicaps. In many instances the handicap will be characterized by a deficit in intellectual functioning, as in the case of persons with mental retardation, the second largest group seen for vocational rehabilitation services (English, Oberle, & Byrne, 1979). For persons with mental retardation, intelligence tests communicate the "level" of handicap quickly and serve as the basis for most diagnosis in this area.

The definition of mental retardation that is proposed by the

American Association on Mental Deficiency (AAMD) and accepted by Diagnostic and Statistical Manual of Mental Disorders (1980) (DSM-III) is the one that is most frequently used:

> Mental retardation refers to significantly subaverage general intellectual functioning existing concurrently with deficits in adaptive behavior. (Grossman, p. 11)

The term significantly subaverage denotes that the score must be at least 2 standard deviations below the mean IQ of the population as a whole. By convention the mean IQ is 100, and although the standard deviation might vary slightly from test to test, it is typically 15 points, so the IQ cutoff point for a diagnosis of mental retardation is generally 70 (two standard deviations below the population norm of 100). However, because no test is absolutely reliable, DSM-III and AAMD express the upper limit of mental retardation as a range from 65 to 75, depending upon clinical judgment to determine the degree of impairment. Within the range of mental retardation there are several subcategories:

Mild - IQ range 55 to 69;
Moderate - IQ range 40 to 54;
Severe - IQ range 25 to 39; and
Profound - IQ range less than 25.

Supported employment programs should have on record an IQ score for each client in their program. The IQ score should be no more than 3 years old, because numerous studies indicate ability scores may, and probably will, change over the years (Carvajal, Lane, & Gay, 1984; Givens & Davis, 1984; Zimmerman, Covin, Woo-Sam, Lotz, & Bley, 1984). IQs serve as a means to summarize information regarding persons participating in a program as an aid to administrators and planners of service. In order to identify the population served by a supported work/employment program, the program should be interested in the range of IQs of the population served, the mean and modal IQ score of that population, and any changes in mean IQ score of the population over time. For example, in Illinois, the population served by supported employment had an IQ range of 18 to 74, with a mean of 53. Lagomarcino (1986) reported serving persons with IQs of less than 20 using a supported employment model. In a recent study of the Illinois Supported Employment Project (Schutz, Trach, & Winking, 1987) reported that the mean IQ of persons served by supported employment projects in Illinois decreased steadily over an 18-month period. This decrease was explained by the fact that as local providers learned how to implement the supported work model, they began to serve lower-functioning persons. This finding may be common in newly developing supported employment programs.

Many validity studies have been done to determine the relationship between IQ and academic achievement, but little is known of how well IQ can predict success on the job. In the area of supported employment, studies have begun to investigate the relationship between IQ and various components of the supported employment model (Trach, Rusch, & DeStefano, 1987). Trach et al. (1987) found that individuals of lower intellectual functioning received more job-matching and maintainence services than persons with higher intelligence scores. These results suggest that alternative service plans can be expected based upon intelligence scores. This type of prediction based upon anticipation of individual needs and directed at improving service delivery is in stark contrast to the gatekeeping functions typically associated with intelligence tests (Menchetti & Rusch, 1987).

The following brief discussion covers several of the most frequently administered measures of general ability/intelligence used to assess persons with severe disabilities (Linn & DeStefano, 1986; Maloney & Ward, 1979; Roszkowski & Bean, 1980) and describes the advantages and limitations of their use in supported employment programs.

The Wechsler Adult Intelligence Scale - Revised (WAIS-R) (Wechsler, 1980). Although standardized on a normal population (N = 1,880) ages 16 - 74, the WAIS-R has been used extensively with persons with all types of disabilities (Zimmerman et al., 1984; Zimmerman & Woo Sam, 1972). In fact, the WAIS-R has replaced the WAIS as the most commonly used test for adults with mild to moderate mental retardation. The reliability and validity of the WAIS-R are well established (Wechsler, 1981), and administration procedures are clear. Extensive training, supervision, and certification are necessary to become an examiner. In addition to obtaining an IQ score, the examiner is able to differentiate between an individual's verbal and performance abilities.

It is important to note that the WAIS-R was constructed to assess IQs of 50 or higher. When the test is administered to persons with IQs below 50, they typically are unable to succeed even on the easiest items, a floor effect that eliminates the possibility of obtaining a meaningful IQ or an interpretable profile. Consequently, the WAIS-R is _not_ an appropriate measure of intelligence for individuals in the low moderate to profound range of mental retardation. The examiner should also be aware that the WAIS-R requires both verbal and motor responses, and several subtests require fine auditory and visual discrimination. For these reasons the WAIS-R may not be appropriate for some individuals with orthopedic, speech, or sensory impairments.

The Stanford-Binet Intelligence Scale: Form L-M (Terman & Merrill, 1973). The Stanford-Binet is still the instrument of choice in evaluating the intellectual functioning of adults in the moderate to profound range of mental retardation. Because the Stanford-Binet spans age ranges from 2 to adult, it is possible to obtain a meaningful IQ as low as 36 and mental age estimates for persons who function below this IQ. The reliability and validity of the Binet have been well documented. Administration procedures are clear. Extensive training, supervision, and certification are necessary to become an examiner. Even though it is the best test available for assessing low-functioning individuals, the Binet has a number of limitations when it is used with clients with mental retardation. Most important, the test is outdated. The most recent norms (Thorndike, 1972) are 15 years old. Second, the test produces only a single summary score, which reflects a mixture of verbal and performance items. There is no mechanism for profile analysis. Last, the test has been criticized as heavily loaded with verbal tasks (Sattler, 1982) and therefore can be misleading for use with persons of low language ability. A recent revision, the Stanford-Binet, Fourth Edition (Thorndike, Hagan, & Sattler, 1985), which addresses each of these weaknesses, is currently available. Unfortunately, adult norms for the test have not yet been released, and its validity for use with special populations has not been established. Consequently, despite considerable limitations, the Stanford-Binet: Form L-M remains the best option for assessing the general ability of lower-functioning persons.

The Slosson Intelligence Test (SIT) (Slosson, 1961). The SIT is a short screening test that consists of content drawn from the Stanford-Binet, and it also heavily emphasizes language. The SIT was standardized on children ages 4-18. The standardization sample was limited and is out of date. The reliability and validity of the mental ages and IQ scores obtained by the test have not been reported. The SIT may be useful as a rapidly administered screening test, but the absence of adult norms, the lack of reliability and validity data, and the single score format limit its value. The SIT is not a substitute for a WAIS-R or a Binet and should not be considered for use in any testing battery associated with supported employment.

Summary. Intelligence test scores have proven useful for describing an individual or a group in terms of general level of functioning in order to identify a target population or to evaluate or monitor a program (Trach et al., 1987). Intelligence scores should not serve as a basis for exclusion from services, but may indicate the nature and extent of appropriate services in a supported employment model (Trach et al., 1987). Because of their composite nature and resistance to change, intelligence scores have less utility when considering day-to-day program planning needs or monitoring an individual's progress over time. Another group of standardized tests have direct applications for program planning and longitudinal follow-up. These are the adaptive behavior measures.

Adaptive Behavior

The construct of adaptive behavior is defined as the performance of the daily activities required for personal and social sufficiency (Sparrow, Balla, & Cicchetti, 1984).

The AAMD manual lists two major facets of adaptive behavior:

1. The degree to which the individual is able to function and maintain himself/herself independently, and

2. The degree to which he or she meets satisfactorily the culturally imposed demands of personal and social responsibility (Grossman, 1977).

These dual facets reflect clearly the values of independence and integration which are associated with supported employment and adult services.

Like deficits in intelligence, deficits in adaptive behavior must be present for a diagnosis of mental retardation to be made. Thus, adaptive behavior scores are useful in identifying members of this target population for a supported employment program. Adaptive behavior deficits are also seen in persons with mental illness, physical handicaps, and sensory impairments. As supported employment programs expand to include these populations, the construct of adaptive behavior may provide a more meaningful description of the level of functioning of the population served than intelligence test scores.

Unlike the construct of intelligence, which provides summary information that is useful to communicate general population abilities but has little relevance for program planning and monitoring worker progress, adaptive behavior comprises several domains that have direct relevance for training. Although content varies across tests, most tests of adaptive behavior contain items that measure motor skills, including fine and gross motor skills; communication skills, including receptive language, expressive language, and written and oral communication; social skills, including peer relationships, leisure activities, and coping skills; personal living skills, including eating and meal preparation, toileting, dressing, personal self-care, and housekeeping; and community living skills, toileting, dressing, personal self-care, and housekeeping; and daily living skills, including time and punctuality, money and banking, vocational skills, and mobility. Many of these skill areas are important for employment success and overall community integration.

Tests of adaptive behavior can serve many purposes in supported employment. Individualized training plans in the areas of personal hygiene, time management, or finance can be developed which are based upon an item analysis of an individual's performance on an adaptive behavior measure overlaid with an analysis of the requisites of the job. Readministrations of the same test annually or biannually can be used to measure an individual's attainment of goals stated in the plan. Changes in adaptive behavior may occur for reasons other than planned intervention, however. As individuals become successfully integrated into the community in leisure, work, and residential settings, increases in adaptive behavior scores will occur. For this reason changes in raw scores can be used to document the adaptive progress of an individual in supported employment or the overall influence of integration into programs other than employment, such as leisure and recreational activities. This measure can be used for program evaluation purposes to document increases in level of independent living as a result of participation in supported employment.

Adaptive behavior instruments have proliferated in the last few years. In 1977, Walls and Werner listed 136 commercially available measures of adaptive behavior. Increasingly, new tests or measures meet standards of psychometric quality and combine both criterion and normative referencing. Most measures involve the cooperation of a knowledgeable informant, typically a parent or teacher. Additional information may be needed from direct observation. The examinee alone is less frequently encouraged to serve as his own informant. Several of the most widely used and promising measures are discussed below.

The AAMD Adaptive Behavior Scale (ABS) (Nihira, Foster, Shellhas, & Leland, 1975). The ABS was developed at the request of AAMD in 1969 and revised in 1974 for use with institutionalized children and adults. Part One consists of 66 items across 10 separate domains, including vocational activity. The domains are scored separately, resulting in a profile of adaptive skills presented as percentiles. Although "vocational activity" is considered separately, the domain consists of only three items: job complexity, job performance, and work habits. Rating of job complexity is limited to a) performs no work at all; b) performs simple work; or c) performs a job requiring the use of tools or machinery. Part Two of the ABS consists of 44 items across 14 domains designed to measure maladaptive behavior. The maladaptive scales are useful to identify behavior and emotional problems that are independent of the intellectual level of functioning.

The ABS was standardized on 4,000 institutionalized individuals with mental retardation, ages 3-69. Percentile norms are available on 11 age groups. The ABS is at present the most widely used of the adaptive behavior measures, yet its limitations are considerable. In contrast to the simplicity of a summary score, the ABS produces a profile that is complex and difficult to interpret. The use of norms based solely on institutionalized subjects is inappropriate for making judgments about noninstitutionalized individuals. Given the number of well-standardized tests of adaptive behavior that have recently appeared on the market, the ABS is no longer the instrument of choice for assessing adaptive behavior in integrated settings.

The Vineland Adaptive Behavior Scale (VABS) (Sparrow, Balla, & Cicchetti, 1984). This revision of the original Vineland Social Maturity Scale (Doll, 1953) attempted to answer several objections associated with the original version as well as with the ABS described above. The VABS consists of a Survey Form of 297 items and an Expanded Form of 572 items. The instrument covers age levels from birth through 18 and low-functioning adults. Items are grouped into four domains: communication, daily living skills, socialization, and motor skills. A number of items across the various domains directly measure vocational adjustment. The VABS also has a second section of 36 items that allow for assessment of problem behaviors.

The standardization of the VABS included 3,000 normal children from birth to 18 with supplemental standardization samples of children with various handicaps (N = 680) and adults (N = 2,202). Norms for normal adults are not available. Adults scores are derived with the use of norms for 18-year-olds. Each of the four domains and an Adaptive Behavior Composite score can be expressed in standard scores, percentile ranks, and age equivalents.

Substantial training is necessary to administer the Vineland using a semi-structured interview technique. The interview requires 40 to 90 minutes administration time.

The lack of adult norms detracts somewhat from the usefulness of the VABS in supported employment settings. Personnel qualifications and lengthy administration time may also detract from its usefulness to some programs. However, if comparison with the normal population is not critical and resources are adequate, the substantial number of items that pertain to vocational adjustment and its excellent standardization warrant consideration of the VABS.

Scales of Independent Behavior (SIB) (Bruininks, Woodcock, Weatherman, & Hill, 1984). The SIB offers an approach to assessing adaptive behavior that provides information that may be suited for supported employment. The SIB utilizes 266 items to assess 4 clusters of behavior: motor skills, social interaction and communication skills, personal living skills, and community living skills, The last category consists of 64 items related to successful employment. Scores can be expressed as standard scores, percentile ranks, and age scores, based on a standardization sample of 1,764 normal individuals ranging from infants to those more than 40 years of age. The SIB also contains a detailed scale that measures internalized, externalized, and asocial maladaptive behavior and assesses both frequency of occurrence and severity of the problem. The SIB appears to be one of the only adaptive behavior scales with normative data for normal adults, which enhances its value for assessing adjustment in the context of employment.

Inventory for Client and Agency Planning (ICAP) (Bruininks, Hill, Weatherman, & Woodcock, 1986). The ICAP offers a quick, convenient way to assess client characteristics and to determine service needs. An abbreviated form of the SIB, the ICAP is appropriate for infancy through adulthood; it takes only 20 to 25 minutes to administer. The ICAP shares common norms with the SIB which was standardized on 1,764 subjects in 40 communities across the United States. Covering the domains of motor skills, social and communication skills, and personal living and community living skills, the ICAP yields the following scores: age equivalents, standard scores, instructional training range, relative performance index, maladaptive behavior indexes, percentile ranks, normal curve equivalents, service levels, and service scores. The ICAP can be administered by a wide variety of personnel and can be used to measure an individual's present status, to identify client needs, to set service goals, to monitor progress, and to evaluate program effectiveness.

Street Survival Skills Questionnaire (SSSQ) (Likenhorn & McCarron, 1980). The SSSQ is designed as a measure of community living and prevocational skills for adolescents and adults with mental retardation. Item content includes basic concepts, functional signs, tools, domestic management, health/safety/first aid, public service, time, money, and measurement. The SSSQ is administered directly to the individual, using a multiple choice format in which the examinee points to the correct response. The test was normed on adolescents and adults with mental retardation (N = 500, ages 15-55) and normal adolescents (N = 200, ages 14-18). Test-retest reliability is high at .94. Validity data are limited. Although its small standardization sample size and limited content make it an unaccepted measure of adaptive behavior for purposes of diagnosis, the SSSQ may provide information that is useful for program planning and therefore may be considered for use in supported employment.

Summary. Tests of adaptive behavior provide information about an individual's motor skills, daily living skills, social skills, and communication skills. Many adaptive behavior tests have items relating directly to work performance. This information can be used in conjunction with job analysis data and other situational assessment information to choose placements and develop training plans. Composite scores on tests of adaptive behavior can be used as indicators of an individual's level of independence and integration. Changes in raw scores over time can be used to document growth in independent living. Both of these uses of adaptive behavior data have direct implications for evaluating supported employment programs.

Although tests of adaptive behavior include items related to work, another group of tests -- tests of vocational skills -- focus solely on this area.

Vocational Skills

The use of work samples as vocational assessment tools "represents the most popular assessment strategy in use today" (Menchetti, Rusch, & Owens, 1983, p. 83). There have been many standardized vocational assessment instruments that have attempted to generate individual profiles of vocational performance and potential. Although such instruments have proven useful in some circumstances, they are of questionable utility for most of the individuals served by supported employment programs. Walk (1985) reviewed the performance of persons with mental retardation, neurological impairments, orthopedic impairments, and visual impairments on 14 work-sample systems. He concluded that not one of the 14 commercial systems was without fault nor could be said to function as a complete assessment tool. The limitations are numerous. Commercial work samples are not readily adaptable to a supported employment setting. The material required is expensive and cumbersome.

The administration time may cover days or weeks.

Work samples have limited predictive value for a population of persons with retardation. These systems have been faulted because they measure products of prior learning and neglect progress made on the job itself. They often fail to duplicate the exact characteristics of specific job clusters and bypass social aspects that are most often associated with job retention (Greenspan & Schoultz, 1981; Schalock & Harper, 1978). They provide little substantive information to be used in developing individualized training plans. In fact, the validity of work sample assessment has not been established even for individuals with mild mental retardation (Irvin, Gersten, Taylor, Close, & Bellamy, 1981).

Because of the severe limitations of the work sample system, other types of vocational assessment instruments are beginning to be developed. One such instrument, the skill inventory, is a low inference approach to vocational assessment because it attempts to attain specific behavioral descriptions of the individual in a particular work setting rather than inferring ability from sampling a limited range of skills in a contrived setting. To use such an inventory effectively, skill requirements for specific jobs in the community should be known in advance and used as the criteria to analyze inventory data and to determine the degree of fit between worker and job.

Social validation methodology plays an integral role in the development of these kinds of assessment instruments. This methodology involves asking a number of "experts" to look at the instrument to determine if the items and the criteria used to evaluate them are relevant, representative, properly stated, and correctly placed. This "expert" review can include the opinions of supervisors and persons who have actually performed the tasks being evaluated in a competitive employment situation.

Vocational Assessment and Curriculum Guide (VACG) (Rusch, Schutz, Mithaug, Stewart, & Mar, 1982). The VACG is a socially and psychometrically validated instrument that assesses broad classes of vocational and social skills of individuals preparing for competitive employment. The skills assessed are those that employers considered important for entry-level employment in food, janitorial, and maid services, and light industrial occupations. The VACG can be used to assess skill deficits and strengths in terms of competitive employment expectations and to prescribe training goals designed to reduce identified deficits. Repeated administrations of the VACG can be used to monitor individual progress and to evaluate program effectiveness by assessing progress toward identified goals. The VACG contains 42 items across 10 subcategories: attendance/endurance, independence, production, learning, behavior, communication skills, social skills, self-help skills, grooming/eating, and math. Each item requires that one or more questions be answered regarding how the worker characteristically responds in a given work situation. The VACG consists of a manual, an inventory, and a curriculum guide.

Reliability and validity studies have recently been completed using the VACG. The reliability data obtained by Menchetti and Rusch (1987) indicated that the VACG provided stable, consistent, and accurate measurement of skills. The VACG validation data indicated that domain scores differentiate between groups of workers with handicaps employed in sheltered settings and groups of handicapped and nonhandicapped workers employed in service occupations.

The VACG must be administered by someone familiar with the worker's behavior in work settings. The evaluator simply marks with a check the answer that best describes the worker's behavior or skills. To compare the worker's VACG scores with scores expected of persons entering competitive employment, item scores are summarized within each of the subcategories, and score totals are charted on the summary profile sheet. After training needs in a specific category have been identified, the evaluator checks the corresponding training goals in the curriculum guide. These goals can serve as the basis for development of individualized training plans.

Summary. The use of work samples as vocational assessment tools is of little validity or utility for supported employment programs. Skill inventories, combined with job analysis information, are one type of vocational assessment which seems to have significant advantages over the work sample systems. The criteria used to evaluate an individual's performance on an inventory are derived from skill requirements for actual jobs in the community. Social validation techniques in which supervisors and co-workers are asked to document the accuracy and relevance of items and criteria in terms of the local job market are used in standardization. Information from the skill inventory along with job analysis data and situational assessment results can serve as the basis for developing training plans.

Career Interests and Awareness

The assessment of the needs and interests of individuals with mental retardation has typically focused on developing measures to determine job preferences of this population. Originally such tests were considered of doubtful value, in that they attempted to assess interest in jobs that might not be available, either because of client's limited abilities or because of a restricted job market (Seltzer, 1984). However the growing movement toward offering competitive work experiences at all levels of ability has tended to expand the range of job types open to persons with handicaps. Several measures of career interest have been developed for persons with handicaps. The Reading-Free Vocational Interest Inventory (RFVII) (Becker, 1981). The RFVII is a picture format, non-reading interest inventory that assesses work preference at the unskilled or semi-skilled levels in 11 areas--automotive, building trades, clerical, animal care, food service, patient care, horticulture, housekeeping, personal service, laundry service, and materials handling. Little training is necessary for the examiner. The examiner presents 55 triads of pictures from which the examinee selects his or her preferred activity in a forced-choice response format. The RFVII was standardized with students with mild mental retardation and learning disabilities at the high school level (N = 2,000) and on trainees at vocational training centers or employees of sheltered workshops (N = 2,000). The 1981 edition has 10 norm groups, including LD. The sample was stratified on geographical location and socioeconomic status. Construct validity coefficients ranged from .00 to .82. No predictive validity attempts have been reported. Test-retest reliability over a two-week interval ranges from .70 to .80. Internal consistency coefficient equals .82.

Several criticisms of the RFVII warrant consideration before it is considered for use. First, the use of a forced-choice format with persons with severe handicaps has not been validated. The fact that males are pictured more frequently than female in work tasks has led to criticisms of sex bias. Finally, job types and response format may not be appropriate for more severely disabled individuals. These criticisms limit the use of RFVII in supported employment.

Vocational Interest and Sophistication Assessment (VISA) (Parnicky, Kahn, & Burdett, 1971). VISA is a pictorial interest survey designed especially for persons with mental retardation. The test is administered individually and is hand scored. There are separate forms for males and females. The male form provides interest and knowledge scores in seven areas: garage, laundry, food service, maintenance, farms and grounds, materials handling, and industry. The female form provides interest and knowledge scores in four areas: business and clerical, housekeeping, food service and laundry, and sewing. Once again, sex bias may be an issue and should be considered before this instrument is used. Reliability and validity data are limited.

CHOICE (Beziat, 1978). Based upon the pioneering work of John Holland (1959), CHOICE is intended for use with individuals with mild or moderate mental retardation. Despite this consideration, the inventory requires the client to make fairly sophisticated decisions regarding personal interests, aspirations, preferences, and estimations of self-competencies. Information is presented in the form of color slides, audiotapes, and drawings. The inventory is self-administered and self-paced. Although standardization was done with individuals in rehabilitation facilities and vocational evaluation units, the validity of this test for use with persons with moderate and severe disabilities has not been established.

Summary. It is important to remember that if career interest instruments are used, they should reflect career opportunities that are actually available to the individual, given his or her level of functioning and the kinds of jobs available in the community. Job development efforts should be aimed at creating a broad range of employment options. Job matching efforts should take worker preference into account when selecting placement sites. Many people doubt the ability of persons with handicaps to have and express a career preference, but research findings suggest that matching a worker with moderate retardation to a job on the basis of inventory responses appears to enhance job retention (Becker, Schull, & Campbell, 1981).

Several measures of vocational interest have been developed specifically for persons with handicaps, but unfortunately, most of these tests are useful only with persons with mild handicaps. In addition, psychometric flaws limit their use to exploration rather than decision making. Despite these limitations, they do appear to meet the usual requirements of interest tests, that is, a framework for the exploration of vocational interests, either to increase options or to narrow the range of possible choices (Hansen, 1984). For persons with more severe handicaps, a better option to obtain a good match between worker interest, ability, and job may be to provide for a varied background of work experience upon which an individual can base his or her preference or interest in a job type.

Language

Expressive and receptive language skills directly influence an individual's ability to profit from verbal direction, the nature and quality of his or her social interaction, and his or her willingness to offer and seek assistance. Any or all of these factors may contribute to success or failure in supported employment. Standardized tests of language may be useful to describe the characteristics of the target population or to obtain a quick assessment of the language abilities of new referrals. However, we know little about the relationship of language scores to job performance. Standardized tests of language ability rarely contain job-specific items. These two factors limit the usefulness of standardized language tests for purposes of placement, program planning, and monitoring client progress.

Because different work settings may have different technical and social language demands, it may be most meaningful to assess language skills in the context in which they occur. Informal observation or structured situational assessment can be used to assess work-related language skills in this manner. In addition many adaptive behavior measures have a number of items that pertain to an individual's use of language in the context of daily living.

Despite limited utility, tests of language are widely used in vocational programs.

The Peabody Picture Vocabulary Test - Revised (PPVT-R) (Dunn & Dunn, 1981). The PPVT-R has replaced its earlier version, the PPVT, (Dunn, 1959) as the most commonly used measure of language for persons with severe handicaps (Pickett & Flynn, 1983). A nonverbal, multiple choice test, PPVT-R is designed to evaluate the receptive vocabulary ability of children and adults. The vocational relevance of the items, however, is limited. Few of the items show any relationship to receptive vocabulary that may be necessary for vocational success. Reliability and validity are well documented. Administration procedures are clear. Scores for adults can be expressed as language ages (LAs) or as standard scores. The test allows for scores as low as 40.

The PPVT-R is sometimes used incorrectly as a measure of general intelligence. Although the PPVT-R is useful for evaluating the ability of adults who are nonverbal or physically handicapped, the single score and the sole reliance on receptive language as a measure of comprehension severely limit its substitution as a measure of intelligence. The PPVT-R should always be substantiated by other assessment information.

Summary. The content and format of standardized tests of language bear little relationship to language demands of a work setting. Because different work settings have different technical and social language demands, it may be most meaningful to assess language skills in the context in which they occur through the use of situational assessment or language subscales of tests of adaptive behavior. Information on an individual's language skills obtained in this way can be used in conjunction with job analysis data in job-matching activities to assess the congruence between amount and type of language required on a particular job and a particular worker's language performance.

Academic Skills

Although academic achievement of an adult with an IQ of less than 70 is almost by definition not greater than Grade 6 or MA 11, achievement tests such as the WRAT and the PIAT are often used to assess clients with mental retardation. The usefulness of information gained in this manner is questionable. Norms are generally not available for adults with handicaps. More important, the relationship between academic skills as measured by these tests and job performance is unknown. What is probably most important to know in supported employment is the worker's functional academic level, that is, ability to read signs, write one's name, and manage time and money. These skills are better assessed in measures of adaptive behavior or by observation than by the use of standardized tests.

Special Aptitude Tests

A variety of aptitude tests have been utilized with adults with handicaps, including measures of fine and gross motor skills (e.g., Purdue Pegboard Test), visual discrimination (e.g., Minnesota Clerical Test), and spatial relations (e.g., Minnesota Spatial Relations Test). Such measures are of questionable value for use with persons with severe handicaps (Rosen, Clark, & Kivitz, 1977). They can add little to the understanding of individual differences when the entire population of persons with mental retardation may score in the first percentile. In this sense norms serve only to classify most subjects as unemployable. Even the development of more appropriate norms that are based on a population of persons with mental retardation is not much of an improvement. These isolated skills are not representative of the complexities of a real life employment setting (Menchetti et al., 1983) and should not be used to determine appropriateness of an individual for a particular job.

Lifestyle/Consumer Satisfaction

This construct is especially important for evaluating the overall impact of supported employment programs on the lives of persons with handicaps. Therefore, measures of lifestyle/ consumer satisfaction are particularly useful in program evaluation. Areas to be measured include the degree of residential, work, and leisure integration, financial independence, extent of support network, presence of family and friendships, feelings of security and satisfaction with life, and degree of personal control. Some of these areas may be captured by measures of adaptive behavior, but others are not commonly found in any standardized measure. Many projects choose to develop informal questionnaires or semi-structured interviews to assess the level of satisfaction of their employees. A small number of standardized measures are available.

Lifestyle Satisfaction Questionnaire (LSS) (Heal, Chadsey-Rusch, & Novak, 1982). The LSS consists of 29 items that are asked of the client in an interview format to assess satisfaction with residence, community, work, friends, and opportunities. Mean scores are available for a sample of 38 individuals with mental retardation. An acquiesence subscale makes it possible to correct satisfaction scores for acquiesence bias. Empirical data indicate this experimental version of the LSS has internally consistent subscales and good test-retest and interrater reliabilities.

Quality of Life Questionnaire (Schalock, 1986). The Quality of Life Questionnaire is a 28-item instrument that can be completed by the examinee or by two staff members who are familiar with the examinee. Items relate to living conditions, personal control, social contact, financial independence, and job satisfaction, and are scored on a 3-point scale.

Summary. Despite the importance of lifestyle/consumer satisfaction as a construct in evaluating the impact of supported employment programs, few standardized instruments exist to measure this construct. If the instruments described here do not meet the evaluation needs of a project, project staff may consider using social validation techniques to design and validate an instrument.

Conclusion

The process of selecting, administering, and using information from standardized instruments in supported employment is complicated, time consuming, and can be unrewarding. To minimize the negative consequences of standardized assessment and to maximize the benefits, careful consideration must be given to assessment instrumentation, process, and use.

Although successful employment of an individual with handicaps requires a great deal of information, not all of that information is best obtained through the use of standardized assessment. Entry-level language skills, academic skills, and vocational skills may be best assessed in the employment setting through structured observation or situational assessment (Menchetti, Rusch, in press; Panscofar, 1986). In this way, assessment can be sensitive to the interaction between skill level and job requisites, thus providing more relevant information for training and program planning. As measured by standardized tests, changes in skill levels in these areas are less important indicators of program effectiveness than more global indicators such as job retention and productivity.

On the other hand, standardized intelligence tests can be very useful for describing the characteristics of the target population in terms of general ability. Tests of adaptive behavior provide information on social skills, daily living skills, level of independence, and level of integration for program planning, monitoring progress, and evaluating program impact. Information obtained from career interest inventories can assist job developers and job placement specialists in matching an employee with a job that is not only feasible at his or her skill level, but is of interest to the employee. Because improving the quality of life for handicapped individuals should be the overriding concern of all human service programs, measures of lifestyle satisfaction should be the primary yardstick by which we measure program success.

An example of an assessment plan for a supported employment program might be conducted as follows. Upon entry to the program, individuals without current (less than three years old) intelligence test scores would be given either a WAIS-R (for persons in the high moderate and mild range of functioning) or a Stanford-Binet: Form L-M (for persons in the low moderate and severe range of functioning). Adaptive behavior scores should be obtained for all individuals upon entry to the program. The Scales of Independent Behavior (SIB) or the Inventory for Client and Agency Planning (ICAP) are two of the most easily administered and appropriate measures for this purpose. Also upon entry, a lifestyle/consumer satisfaction scale such as the Lifestyle Satisfaction Scale (LSS) could be administered to enable pre-post placement comparisons measuring the impact of supported employment upon quality of life. Information from a vocational skills inventory such as the VACG, from situational assessments, and from job analysis can be used to match an individual with a potential job or to assess the degree of fit between an individual's skills and the requisites of the job in which he or she is placed. These on-site assessments may need to be repeated at each new job placement.

Adaptive behavior and lifestyle/consumer satisfaction measures can be readministered at one- or two-year intervals, depending upon program planning or program evaluation.

Given the unique characteristics of the population served, special consideration must be given to the selection, administration, and use of the results of standardized tests in supported work/employment. As these programs increase in popularity, the development of new measures may make the job easier. As always, we should be searching for ways to gain relevant information quickly and accurately in order to prescribe and evaluate those services that best serve these individuals.

References

Becker, R.L. (1981). Revised reading-free vocational inventory manual. Columbus, OH: Elbern Publications.

Becker, R.L., Schull, C., & Campbell, K. (1981). Vocational interest evaluation of trainable mentally retarded adults. American Journal of Mental Deficiency, 85, 350-356.

Beziat, C. (1978). CHOICE. College Park: University of Maryland. Center of Rehabilitation and Manpower Services.

Bruininks, R.H., Hill, B.K., Weatherman, R.F., & Woodcock, R.N. (1986). Inventory for client and agency planning. Allen, TX: DLM Teaching Resources.

Bruininks, R.H., Woodcock, R.W., Weatherman, R.F., & Hill, B. (1984). Scales of independent behavior. Allen, TX: DLM Teaching Resources.

Carvajal, T.L., Lane, J.M., & Gay, D.A. (1984). Longitudinal comparisons of Wechsler scales in educationally mentally handicapped children and adults. Psychology in the Schools, 21, 137-140.

DeStefano, L., & Linn, R. (1987). Review of student assessment instruments and practices (2nd ed.). Champaign, IL: Transition Institute at Illinois.

Doll, E.A. (1953). Vineland social maturity scale. Circle Pines, MN: American Guidance Services.

Dunn, L.M. (1959). Peabody picture vocabulary test. Circle Pines, MN: American Guidance Services.

Dunn, L.M., & Dunn, L.M. (1981). Peabody picture vocabulary test (Revised ed.). Circle Pines, MN: American Guidance Services.

English, R.W., Overle, J.B., & Byrne, A. (1979). Supervision of counselor's work with retarded persons. Rehabilitation Counseling Bulletin, 22, 113-122 (3rd ed).

Gaylord-Ross, R. (1985). The role of assessment in transitional, supported employment. San Francisco State University.

Givens, T.S., & Davis, J.R. (1984). The stability of special education categorical assignments. Journal of Psychoeducational Assessment, 2, 131-139.

Greenspan, S., & Schoultz, B. (1981). Why mentally retarded adults lose their jobs: social competence as a factor in work adjustment. Applied Research in Mental Retardation, 2, 23-28.

Grossman, H.J. (1977). Manual on terminology and classification in mental retardation: 1977 revision, American Association on Mental Deficiency. Baltimore: Garamond/Pridemark Press.

Halpern, A.S., Lehman, J.P., Irvin, L.K., & Heiry, T.J. (1982). Contemporary assessment for mentally retarded adolescents and adults. Baltimore: University Park Press.

Hansen, J.C. (1984). Interest inventories. In G. Goldstein & M. Hersen (Eds.). Handbook of psychological assessment. New York: Pergamon.

Heal, L., & Chadsey-Rusch, J. (1985). Lifestyle satisfaction scale (LSS): Assessing individuals' satisfaction with residence, community setting, and associated services. Applied Research in Mental Retardation, 6, 475-490.

Holland, J. (1959). A theory of vocational choice. Journal of Counseling Psychology, 6, 35-45.

Irvin, L.K., Gerpten, R., Taylor, V.E., Close, D.W., & Bellamy, G.T. (1981). Vocational skill assessment of severely mentally retarded adults. American Journal of Mental Deficiency, 85, 635-638.

Lagomarcino, T. (1986). The Illinois Competitive Employment Project. Paper presented at the Project Director's 2nd Annual Meeting, Washington, DC.

Likenhoker, D., & McCarron, L. (1980). Adaptive behavior: The street survival skills questionnaire. Dallas: Common Market Press.

Linn, R., & DeStefano, L. (1986). Review of student assessment instruments and practices. Champaign, IL: Transition Institute at Illinois.

Maloney, M.P., & Ward, M.P. (1979). Mental retardation and modern society. New York: Oxford University Press.

Menchetti, B. M., Rusch, F.R., & Owens, D. (1983). Vocational training. In J.L. Matson & S.E. Breuning (Eds.). Assessing the mentally retarded, (pp. 247-284). New York: Grune & Stratton.

Menchetti, B. M., & Rusch, F. R. (1987). An analysis of selected psychometric properties of the Vocational Curriculum Guide. (This volume).

Nihira, K., Foster, R., Shellhaus, M., & Leland, H. (1974). AAMD adaptive behavior scale. Washington, DC: American Association on Mental Deficiency.

Parnecky, J.J., Kahn, H., & Burdett, A.D. (1971). Standardization of the VISA technique. American Journal of Mental Deficiency, 75, 442-448.

Pickett, J.M., & Flynn, P.T. (1983). Language assessment tools for mentally retarded adults: Survey and recommendations. Mental Retardation, 21, 244-247.

Rosen, M., Clark, G.S., & Kivitz, M.S. (1977). Habilitation of the handicapped. Baltimore: University Park Press.

Roszkowski, M.J., & Bean, A.G. (1980). The Adaptive Behavior Scale (ABS) and IQ: How much unshared variance is there? Psychology in the Schools, 17, 452-459.

Rusch, F.R., Schutz, R.P., Mithaug, D.E., Stewart, J.E., & Mar, D.W. (1982). Vocational assessment and curriculum guide. Seattle, WA: Exceptional Education.

Sattler, J. (1982). Assessment in special and remedial education. Boston: Houghton Mifflin.

Schalock, R. (1986). Defining and measuring the quality of work and outside life. Paper presented at the 1986 annual TASH Conference, San Francisco.

Schalock, R.L., & Harper, R.S. (1978). Placement from community based mentally retarded programs: How well do clients do? American Journal of Mental Deficiency, 83, 240-247.

Schutz, R.S., Trach, J.S., & Winking, D. (1987). The Illinois Supported Work/Employment Project. Champaign, IL: OCDSP.

Slossen, R.L. (1961). Slosson intelligence test for children and adults. East Aurora, NY: Slosson Educational Publications.

Sparrow, S.S., Balla, D.A., & Cicchetti, D.V. (1984). Vineland adaptive behavior scales. Circle Pines, MN: American Guidance Services.

Terman, L. M., & Merrill, M.A. (1973). The Stanford-Binet Intelligence Scale (3rd rev.). Boston: Houghton Mifflin.

Thorndike, R.L. (1973). Stanford-Binet Intelligence Scale, Form L-M, 1972 norms tables. Boston: Houghton Mifflin.

Thorndike, R.L., Hagan, E., & Sattler, J. (1985). The Standford-Binet (4th ed.). Chicago: Riverside Press.

Trach, J.S., Rusch, F.R., & DeStefano, L.D. (1987). The degree of implementation for supported work programs. Champaign, IL: Illinois Supported Work/Employment Project.

Walk, T.A. (1985). A review of commercial vocational evaluation systems and disability groups. Vocational Evaluation and Work Adjustment Bulletin, 18 (1), 29-33.

Walls, R.T., & Werner, T.J. (1977). Vocational behavior checklists. Mental Retardation, 15, 30-35.

Wechsler, D. (1981). Wechsler Adult Intelligence Scale - Revised. New York: Psychological Corp.

Zimmerman, I.L., & Woo Sam, J.M. (1972). Clinical interpretation of the WAIS. New York: Grune & Stratton.

An Analysis of Select Psychometric Properties of the Vocational Assessment and Curriculum Guide

Bruce M. Menchetti* and Frank R. Rusch

Vocational assessment practices have a tremendous impact upon the lives of people with handicaps. In the course of seeking vocational services, these individuals may be asssessed by several agencies, each with its own instrumentation and purpose. Responding to federal legislation, local school districts provide an assessment of the interests, needs, and abilities of vocational education students who have special needs. State vocational rehabilitation departments provide assessment services that determine an individual's potential for gainful employment. The U.S. Employment Service utilizes a battery of tests developed to match a person's work traits and aptitudes to specific occupational groups. With so many agencies providing such a variety of assessment services, one would expect the employment training opportunities available to

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Present Address: The School District of Greenville County,
South Carolina

persons with handicaps to be unlimited. Unfortunately, this is not the case. Study after study investigating the post-school adjustment of adults with handicaps, especially those with mental retardation, have suggested that these individuals experience high rates of unemployment, receive much lower wages than people who are not disabled, and are often placed in programs that do not effectively promote movement into community employment (Hasazi, Preskill, Gordon, & Collins, in press; Mithaug, Horiuchi, & Fanning, 1985; Wehman, Kregel, & Seyfarth, in press; Will, 1984).

As the initiation point of service delivery, assessment has played a key role in discouraging employment. In too many cases, vocational assessment has not been the means of identifying training opportunities, but instead has functioned to limit access to employment. Several reasons have been suggested for this paradox. Some have pointed out that many of the standardized measures of intelligence, achievement, and aptitude used for predicting successful vocational adjustment of persons with handicaps have never been validated for this purpose (Gold, 1973; Neff, 1966; Wolfensberger, 1967). Others have suggested that the purpose of many vocational assessment programs, namely the prediction of general performance, may be unrelated to the more relevant goal of identifying specific training needs (Cobb, 1972; Halpern, Lehmann, Irvin, & Heiry, 1982; Menchetti, Rusch, & Owens, 1983; Schalock & Karan, 1979). Whatever the reasons, traditional assessment services have never fulfilled the purpose stated by the Vocational Evaluation and Work Adjustment Association (VEWAA). VEWAA has stated that any assessment effort must benefit both the service provider and the client by providing information that facilitates their joint development of a plan of action (Schneck, 1981). For many persons the result of traditional vocational assessment has been inaction and ineligibility.

Some professionals have called for a major shift in the orientation of vocational assessment services for adolescents and adults with handicaps. For example, Menchetti, Rusch, and Owens (1983) suggested replacing vocational assessment procedures that embrace a psychometric, prediction orientation with assessment procedures that emphasize measurement of actual skills required for employment. This approach to assessment is referred to as "ecological analysis." Wehman, Renzaglia, and Bates (1985) have defined ecological analysis as a systematic approach to identifying skills that have a high priority for a person to learn. One instrument that includes skills that have been identified by employers is the Vocational Assessment and Curriculum Guide or VACG (Rusch, Schutz, Mithaug, Stewart, & Mar, 1982). Rusch, Schutz, and Agran (1982) surveyed employers in service and light industries to determine the skills required for entry-level jobs. The results of this research provided the basis for selecting items to include in the VACG.

The VACG is a behavior rating scale designed to provide a measure of the vocational and social skills of persons with handicaps. The VACG comprises eight domains, including attendance/endurance, independence, production, learning, behavior, communication, social skills, and self-help skills. There are 66 items on the VACG, each beginning with the phrase, "Does the worker," followed by a description of the behavior being assessed. Several alternative responses are provided, which indicate the level of the behavior displayed by the client. Raters are instructed to select the phrase that best describes the individual's current level of functioning. The VACG was designed to be used by classroom teachers, rehabilitation counselors, adult service providers, parents, and paraprofessionals to determine an individual's skill level in relation to standards suggested as important for success in service occupations, such as the food service industry or janitorial work, as well as light industrial occupations. The primary purpose of the instrument is to assist in the planning of instructional programs for individuals interested in competitive employment.

This study attempted to investigate the psychometric properties of the VACG in a manner consistent with technical standards. Specifically, this study examined several aspects of reliability and validity of the VACG using subjects with characteristics similar to those for whom the instrument was designed. Test-retest, internal consistency, and interrater reliability issues were addressed. Reliability data were collected for each VACG domain and, in some instances, the total test score. The validity of the VACG for the purpose of differentiating between individuals based on employment characteristics was addressed in four separate subject groups.

Method

Reliability

Three aspects of the reliability of the VACG were addressed. Test-retest coefficients were computed to estimate the stability of the VACG scores. Internal consistency coefficients were computed to estimate the homogeneity of VACG domains and the total test. Finally, interrater reliability was estimated by determining the agreement percentages obtained by separate observers using the instrument.

Subjects. The subjects used to estimate the test-retest reliablity of the VACG were 98 mentally retarded and multihandicapped individuals. These subjects were grouped according to their current employment status. Forty-seven handicapped persons employed exclusively in sheltered work settings, 34 individuals who had once worked in the competitive labor force, but were terminated and returned to a sheltered situation, and 17 handicapped workers employed in nonsheltered community jobs for periods of six months or longer constituted the sample for the test-retest procedure.

The subject sample was made up of individuals whose primary diagnosis was moderate to severe mental retardation (IQ below

55). Many individuals in the sample also displayed secondary handicapping conditions such as orthopedic handicaps, emotional disturbance, and speech and language disorders. The subjects ranged in age from 18 to 57. There were an approximately equal number of males and females in the sample.

Subjects who were not competitively employed at the time of the study were served by a local rehabilitation facility. This facility employed individuals in both a regular work program and a separate work activity center. Subjects were placed in one of these settings based on their individual productive capacity. Subjects who were competitively employed at the time of the study were working in a variety of food service and janitorial jobs. These community employment settings included university dormitory kitchens, restaurants, hotels, and other typical service occupation sites.

A pooled sample of all the ratings in both the reliability and validity phases of the study was used to calculate the internal consistency coefficients. This resulted in scores from 364 separate administrations being used to calculate the split-half reliabilities. A subsample of six subjects, ranging in age from 21 to 26, was used to calculate the interobserver percentages. Five male subjects and one female subject participated in this aspect of the reliability procedure. Generally, the procedures used in the study represented the traditional psychometric techniques most likely to be used to establish the reliability of instruments such as the VACG.

Data collection procedure. Subjects were rated on two separate occasions by raters who were familiar with their behavior. Subjects were assessed by individuals with whom they worked, or who observed them at work in their jobs. These raters included workshop supervisors, workshop trainers, job coaches, and work supervisors in community work settings. These raters represented individuals who would be prospective users of the VACG. Subjects working in the sheltered work setting were rated by their workshop supervisors; competitively employed subjects were rated by job coaches or their immediate work supervisors.

The raters who participated in the reliability procedure were asked to read the administration instructions provided with each VACG and to complete the instrument. All raters had previously used the VACG to rate workers and were familiar with the administration of the instrument. This administration procedure parallels the first-person assessment procedure suggested for traditional behavior rating instruments such as the Adaptive Behavior Scale (Nihira, Foster, Shellhaas, & Leland, 1975). Each rater was assigned from one to five subjects to assess. After completing the first rating with the VACG, the same raters were asked to complete another inventory for the same subjects. The time period between the first and second ratings was approximately two weeks.

To determine the internal consistency of the VACG, coefficients of equivalence were computed. Coefficient alpha

(Cronbach, 1951) was used to obtain coefficients for each VACG domain score and for the total test score. The alpha coefficients are generally considered good approximations of consistency between items not scorable using the dichotomous zero-or-one procedure. The alpha coefficients represented the average of all possible split-half coefficients.

To estimate the interrater reliability of the VACG, six subjects were rated by two separate observers on the same measurement occasion. The raters were employed as job coaches by the rehabilitation facility. All six subjects were trained on a mobile work crew performing custodial work. Their behavior was assessed by the raters as the subjects cleaned one of the contract sites. Each subject was rated on the same day in order to keep the raters' experience and knowledge of the subjects consistent. A percentage of interobserver agreement was obtained for each of the eight domains and the total test score for each of the six subjects. This resulted in 54 interobserver agreement percentages. The percentage of interobserver agreement was determined by dividing the lower score by the higher score obtained by the raters for each VACG domain.

Validity

In order to determine whether the VACG was useful in determining appropriate instructional services for individuals with mental retardation interested in competitive employment, the following validation procedure was designed. The procedure attempted to determine if the VACG could differentiate between groups of individuals with various levels of work experience. The rationale behind this approach was that if the VACG was to be useful in the specification of instructional objectives for persons with handicaps, then the individual's score on the instrument should be related to a specified level of work performance. With knowledge such as this, VACG users could prescribe valid instructional goals and objectives to facilitate advancement to the next level of work performance.

Subjects. There were 131 subjects in the validation sample. These subjects represented four worker groups with different levels of work experience. Fifty-nine workers in the sample (Group A) had only sheltered work experience. These individuals had never worked in the competitive labor force and were employed in a variety of sheltered work settings including a regular work program, a work adjustment program, and a work activity center. The majority of subjects in Group A, however, were employed in the work activity center at the time of the study. Twenty-six subjects (Group B) who were employed in sheltered work settings at the time of the study had once had competitive employment experience, but had been fired. These individuals were also employed in a variety of sheltered work programs with the majority working in a work adjustment program. Nineteen individuals (Group C) were disabled workers employed in a variety of competitive employment settings in the community. All of these individuals had previous sheltered work experience, had participated in a competitive employment training program, and had been working successfully with various degrees of support for six months or longer at the time of the study. Finally, 27 subjects (Group D) in the validation study were not disabled, had never been placed in a sheltered workshop, and were employed in a variety of competitive employment settings in the community.

The subjects in Groups A, B, and C were individuals with a primary handicap of mental retardation. Some of the subjects in these groups had secondary handicapping conditions such as speech and language disorders or orthopedic disabilities.

The nonhandicapped subjects (Group D) were selected for the study based on several factors. First, these individuals were selected on the basis of their occupation. The subjects in Group D were employed in a variety of positions in the food service and janitorial industries, such as kitchen helper, kitchen laborer, and maid. A second selection criterion for Group D subjects was that these individuals did not exhibit or report any disability at the time of the study. Finally, Group D subjects were selected on the basis of their work performance. These subjects were "average" workers, that is, individuals who did not consistently fall either above or below their employers' expectations for work performance.

Data collection procedure. The raters used in the validation phase of the study were prospective users of the VACG, including workshop supervisors, workshop trainers, job coaches, and job supervisors in the competitive employment settings. The subjects were rated by individuals with whom they worked or who observed them at work in their individual employment situation. All raters were familiar with the behavior of the subjects assigned to them.

Raters who participated in the validation study were instructed to complete the VACG for assigned subjects in a manner similar to the method described in the reliability procedure.

The settings in which the subjects' behaviors were rated in the validation procedure were similar to those used in the reliability phase of the study. Group A and B subjects were rated in various sheltered settings, including regular work programs, work adjustment programs, and work activities centers. Subjects in Groups C and D were rated in a variety of competitive job sites in the community such as kitchens, restaurants, hotels, and other service industry sites.

Results

Test-Retest Reliability of the VACG

Coefficients of stability were computed to estimate the stability of each of the VACG domains for each subject group to determine if domain scores would remain equally stable for workers with different employment experiences.

The test-retest coefficients and standard errors of measurement for the first subject group are summarized in Table 1. The test-retest coefficients for subjects having only sheltered work experience ranged from slightly over .76 in the learning domain to over .95 in the communication skills area. The median of the correlation coefficients for this group was approximately .88.

The stability coefficients for the second subject group are reported in Table 2. These subjects represented persons with mental retardation who had some competitive employment experience, had exited the labor force, and were working in a sheltered work program at the time of the study. These data indicated a range of reliability from .71 in attendance/ endurance to greater than .96 in the communication skill domain. The median for the test-retest coefficients for this group was .88.

The test-retest coefficients for the final group, those subjects with mental retardation who had been working in competitive jobs for periods of longer than six months, are reported in Table 3. The range of reliability coefficients was -.69 in attendance/endurance to approximately .91 in communication skills. The median of the test-retest coefficients was .84 for this group of subjects.

Internal Consistency of the VACG

Coefficients of equivalence were computed to estimate the internal consistency of the VACG. Coefficient alpha (Cronbach,

Table 1

Test-Retest Reliability Coefficients for Subjects Having Only Sheltered Work Experience (n = 47)

	First Administration		Second Administration			
Domain	Mean	SD	Mean	SD	SEM	r
Attendance/endurance	7.83	2.06	8.11	2.08	0.76	.862
Independence	14.72	3.98	14.28	3.98	1.85	.783
Production	4.66	3.39	4.70	3.26	1.09	.897
Learning	7.36	3.34	7.34	3.22	1.62	.766
Behavior	13.51	6.21	12.30	6.60	2.05	.891
Communication skills	17.30	8.93	16.32	8.85	1.89	.955
Social skills	2.40	1.51	2.32	1.40	0.63	.824
Self-help skills	4.91	2.09	4.98	2.20	0.65	.902
Mean					1.318	
Median						.877

Table 2

Test-Retest Reliability Coefficients for Sheltered Workshop Subjects With Previous Competitive Employment Experience (n = 34)

	First Administration		Second Administration			
Domain	Mean	SD	Mean	SD	SEM	r
Attendance/endurance	7.59	2.71	8.09	2.66	1.45	.714
Independence	16.06	4.70	16.88	4.22	2.36	.747
Production	9.65	3.72	9.76	3.90	1.33	.872
Learning	9.56	2.82	9.94	2.89	0.86	.906
Behavior	16.86	5.98	17.38	5.70	2.03	.885
Communication skills	26.35	7.97	26.79	7.62	1.53	.963
Social skills	3.32	1.25	3.53	1.06	0.42	.886
Self-help skills	5.71	1.84	5.76	2.00	0.88	.772
Mean					1.358	
Median						.879

1951) was used to obtain correlations of all possible split-half reliabilities. Table 4 summarizes the internal consistency data. The coefficients obtained ranged from a low of .59 in attendance/endurance to a high of .91 in communication skills. The median of the split-half coefficients was .78. The coefficient obtained for the total VACG score was approximately .95.

Interobserver Reliability of the VACG

The interobserver agreement percentages obtained for VACG domain scores ranged from 90 to 100. The agreement percentages obtained for each VACG domain were: attendance/endurance = 98; independence = 90; production = 94; learning = 91; behavior = 94; communication skills = 97; social skills = 100; and self-help skills = 100. The average agreement percentage for the total test score was 96.

Validity of the VACG

Domain score averages for each of the VACG domains are depicted in Figure 1 for the four subject groups used in the validation procedure. The pattern of the difference between groups suggests that subjects with less restrictive work placements who have successful competitive employment experience tend to score higher on VACG domains than do subjects placed in more restrictive, sheltered settings. The two subject groups with successful competitive employment experiences (Groups C and

Table 3

Test-Retest Reliability Coefficients for Competitively Employed Subjects (n = 17)

	First Administration		Second Administration			
Domain	Mean	SD	Mean	SD	SEM	r
Attendance/endurance	9.41	2.14	12.88	12.84	2.78	-.686
Independence	18.71	1.87	18.71	2.02	0.87	.785
Production	10.94	3.08	11.35	3.10	1.21	.846
Learning	8.00	2.50	8.47	2.23	0.95	.857
Behavior	19.76	2.56	19.88	2.49	0.81	.900
Communication skills	27.59	5.29	28.00	4.55	1.60	.909
Social skills	3.71	0.57	3.59	0.77	0.26	.794
Self-help skills	6.41	1.37	6.12	1.49	0.55	.838
Mean					1.129	
Median						.842

Table 4

Alpha Coefficients for the Vocational Assessment and Curriculum Guide

Domain	Number of Items	Mean	SD	r
Attendance/endurance	3	7.13	2.78	.588
Independence	9	15.95	3.83	.675
Production	7	7.17	4.55	.758
Learning	6	7.91	3.07	.709
Behavior	9	15.83	5.68	.810
Communication skills	21	21.74	9.08	.906
Social skills	4	3.04	1.41	.814
Self-help skills	7	5.51	1.89	.793
Total	66	84.29	25.32	.946

D) consistently obtained the highest or second highest average domain scores, whereas the two subject groups who were working in sheltered settings (Groups A and B) consistently scored lowest on VACG domains. The two exceptions to this pattern occurred in the independence and learning domains. In the independence domain, subjects who were fired and returned to a sheltered work setting averaged slightly higher than nondisabled workers, but not as high as competitively employed persons with mental retardation. In the learning domain, Group B subjects who had some competitive employment experience but had returned to a sheltered setting scored higher than Group C subjects (competitively employed workers who were retarded), but not as high as the nondisabled workers. These exceptions might be due to the effects of previous competitive experience on the perceptions of raters assessing Group B subjects.

In order to determine whether the group differences depicted in Figure 1 were statistically significant, several multivariate tests were applied to the data. A Wilks lambda criterion (.414), a multivariate F-ratio (Rao = 10.0254), and a Rawley-Hotelling trace (Tau = 1.1807) were obtained. The multivariate F-ratio and Rawley-Hotelling trace tests were both significant beyond the .001 probability level.

To evaluate whether or not the group differences were significant for specific VACG domains, several univariate F-tests were utilized. In this procedure, univariate analyses of variance were performed on the data obtained for each of the

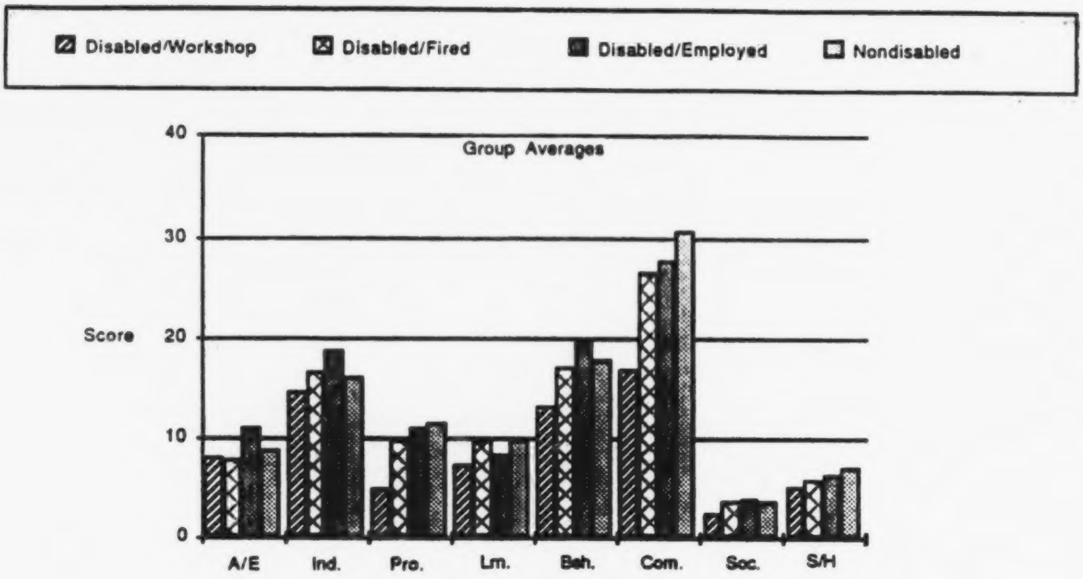

Figure 1 Domain score averages for each of the Vocational Assessment and Curriculum Guide domains

Table 5

Results of Univariate Analysis of Variance for VACG Domains

Domain	MS-treatment	MS-error	F-ratio	Probability
Attendance/endurance	103.2935	17.7726	5.8119	.0011
Independence	181.6950	14.9765	12.1320	.0000
Production	637.9179	12.6872	50.2806	.0000
Learning	103.4564	8.9568	11.5482	.0000
Behavior	510.7368	32.5077	15.7113	.0000
Communication skills	2439.6504	59.4721	41.0218	.0000
Social skills	26.4317	1.5018	17.5995	.0000
Self-help skills	39.2453	3.4587	11.3470	.0000

DF (treatment) = 3
DF (error) = 240

Table 6

Differences among Means Evaluated against HSD for Each VACG Domain

Attendance/endurance (HSD = 2.914)

	$\bar{x}_2$	$\bar{x}_1$	$\bar{x}_4$	$\bar{x}_3$
$\bar{x}_2 = 7.79$	-	0.03	0.84	3.18*
$\bar{x}_1 = 7.82$		-	0.81	3.15*
$\bar{x}_4 = 8.63$			-	2.34
$\bar{x}_3 = 10.97$				-

*$p < .05$

Independence (HSD = 2.675)

	$\bar{x}_1$	$\bar{x}_4$	$\bar{x}_2$	$\bar{x}_3$
$\bar{x}_1 = 14.42$	-	1.58	2.04	4.44*
$\bar{x}_4 = 16.00$		-	0.46	2.86*
$\bar{x}_2 = 16.46$			-	2.40
$\bar{x}_3 = 18.86$				-

*$p < .05$

Production (HSD = 2.452)

	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_4$
$\bar{x}_1 = 4.86$	-	4.90*	6.06*	6.51*
$\bar{x}_2 = 9.76$		-	1.16	1.61
$\bar{x}_3 = 10.92$			-	0.45
$\bar{x}_4 = 11.37$				-

*$p < .05$

Table 6 (con't)

Learning (HSD = 2.069)

	$\bar{x}_1$	$\bar{x}_3$	$\bar{x}_2$	$\bar{x}_4$
$\bar{x}_1 = 7.27$	-	0.97	2.43	2.47
$\bar{x}_3 = 8.24$		-	1.46	1.50
$\bar{x}_2 = 9.70$			-	0.04
$\bar{x}_4 = 9.74$				

$^*p < .05$

Behavior (HSD = 3.942)

	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_4$	$\bar{x}_3$
$\bar{x}_1 = 13.17$	-	3.83	4.50	6.59*
$\bar{x}_2 = 17.00$		-	0.67	2.76
$\bar{x}_4 = 17.67$			-	2.09
$\bar{x}_3 = 19.67$				-

$^*p < .05$

Communication skills (HSD = 5.331)

	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_4$
$\bar{x}_1 = 16.79$	-	9.63*	10.78*	13.73*
$\bar{x}_2 = 26.42$		-	1.15	4.10
$\bar{x}_3 = 27.57$			-	2.95
$\bar{x}_4 = 30.52$				-

$^*p < .05$

Table 6 (con't)

Social Skills (HSD = 0.8472)

	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_4$	$\bar{x}_3$
$\bar{x}_1 = 2.46$	-	0.99*	1.13*	1.22*
$\bar{x}_2 = 3.45$		-	0.14	0.23
$\bar{x}_4 = 3.59$			-	0.09
$\bar{x}_3 = 3.68$				

*$p < .05$

Self-help skills (HSD = 1.286)

	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_4$
$\bar{x}_1 = 4.89$	-	0.86	1.38*	2.00*
$\bar{x}_2 = 5.75$		-	0.52	1.14
$\bar{x}_3 = 6.27$			-	0.62
$\bar{x}_4 = 6.89$				-

*$p < .05$

eight domains. Table 5 lists the F-ratios obtained for each VACG domain. The probability levels for each F-ratio obtained were equal to or less than .001, which suggests that the observed group differences were statistically significant for each VACG domain.

Tukey's honestly significant difference test (HSD) was performed to evaluate the differences among group means. The Q statistic at the .05 probability level with infinite degrees of freedom was used to calculate the HSD value. The significant differences obtained are summarized in Table 6.

Attendance/endurance. The competitively employed subject group comprising workers who were handicapped scored significantly higher than both sheltered work groups. There were no other significant differences among group means.

Independence. The competitively employed, handicapped worker group average was significantly higher than that of disabled workers with no competitive employment work history and than the average obtained by nondisabled workers, which suggests that competitively employed workers with handicaps are perceived as being highly independent. This finding may be an artifact of rater bias, because many subjects in the high group were rated by their trainers, who have a vested interest in their success. The sheltered employment group who had previous competitive experience might have been rated high for the same reason, that is, rater bias. Also, raters in the sheltered setting may have inflated their ratings because of the perception that these individuals were high functioning.

Production. In the Production domain, workers with handicaps who had no competitive employment experience were rated significantly lower than any other group. There were no other differences among group means. This finding may suggest that the VACG fails to discriminate the productivity of persons having some competitive work experience.

Learning. In the Learning area, workers with handicaps who had no competitive employment experience obtained significantly lower scores than individuals who had returned to a sheltered setting from the competitive labor force and from nonhandicapped workers. There was no significant difference, however, between the scores obtained by competitively employed workers with handicaps and either sheltered work groups.

Behavior. Both disabled and nondisabled competitively employed subject groups scored significantly higher than sheltered workshop employees with no competitive employment experience. This finding suggests that Behavior is a VACG domain that discriminates well between persons with no community work experience and persons who are competitively employed.

Communication skills. In the Communication Skills domain, all subject groups obtained significantly higher scores than the sheltered work group with no competitive work experience. There were no significant differences between any other groups, however.

Social skills. In the Social Skills domain, the pattern of significant differences among group means was the same as that obtained in the Communication Skills area; that is, all subject groups were rated higher than sheltered workshop subjects with no competitive employment experience.

Self-help skills. Both disabled and nondisabled competitively employed subjects were rated significantly higher than sheltered workshop employees with no competitive work history. In the Self-help domain there were no other significant group differences.

On all but one VACG domain, namely the Learning area, there were significant differences between the average scores obtained by competitively employed workers with handicaps and sheltered workshop employees with no competitive employment history. This pattern suggests that, with the exception of the Learning domain, VACG ratings can be used to make valid discriminations between individuals in sheltered workshops seeking their first competitive employment placement and successful disabled employees in competitive settings.

Discussion

This study was an attempt to apply classical psychometric procedures to the problem of establishing the technical adequacy of the Vocational Assessment and Curriculum Guide (VACG). The VACG, which was designed to facilitate efforts in planning programs for individuals with handicaps interested in competitive employment, is a criterion-referenced behavior rating scale. More significantly, the VACG represents a new approach to vocational assessment, one based upon an analysis of the employment ecology. Previously, the lack of evidence supporting the technical adequacy of instruments with an ecological analysis orientation has been a major impediment to the acceptance of this approach into assessment practice.

The appropriate procedure for judging the technical features of criterion-referenced instruments such as the VACG has been discussed in the literature. For example, Anastasi (1976) suggested that reliability procedures appropriate for norm-referenced instruments may not be appropriate for criterion-referenced measures. It is the belief of these authors that until a suitable set of empirically based standards are developed for criterion-referenced instruments, these measures should be evaluated by means of techniques accepted for norm-referenced instruments, even though these techniques underestimate the technical soundness of criterion-referenced instruments. For ecological analysis to gain a foothold in the assessment establishment, however, authors of instruments with this orientation may have to adopt the traditional approach to establishing the technical adequacy of their measures.

The results of this study support the stability of scores obtained with the VACG. Test-retest or stability coefficients were found to fall within acceptable ranges for behavior-rating scales. Furthermore, this study reported stability estimates for various groups of subjects who represented persons for whom the VACG was designed. These estimates suggested that VACG domain scores were equally stable across persons having various employment characteristics. Stability of measurement is a desirable characteristic of any rating scale because it assures potential users that scores represent a lasting quality of the individual being rated (Cronbach, 1960). The evidence of score stability presented in this study will allow users of the VACG to have confidence that the scores they obtain will not change substantially over a short period of time. This, of course, will permit teachers, rehabilitation counselors, and other users of the VACG to plan vocational training programs with the knowledge that the plan has been based on an assessment of stable vocational and social skills.

This study also presented evidence related to the consistency of the VACG scores. Data were presented for estimates of internal consistency as calculated by alpha coefficients for each VACG domain and the total test score. The estimates were in a generally acceptable range for this psychometric criterion. The internal consistency estimates obtained in this study suggested that the VACG domain scores and the total test score represented measures of homogeneous behavior. In other words, a person's rating on individual items of the VACG appears to relate to both the domain score and the total test score. For prospective users of the VACG, the internal consistency findings of this study have practical significance. Given the results of this study, VACG users can be assured that domains measure related behaviors. Internal consistency data provide evidence supporting the overall technical adequacy of the VACG.

Another aspect of the reliability of the VACG examined in this study was interrater agreement. This aspect of the reliability of measurement is the most frequently reported index for behavioral assessment instruments. The data presented here suggested that, in terms of interrater agreement, the VACG provides a highly reliable measure of the vocational and social skills of individuals with handicaps. Bates and Hanson (1983) have pointed out that the effectiveness of making data-based decisions, such as planning a program of vocational training, is dependent upon measurement reliability. Based on the data obtained in this study, it would appear that the VACG is a useful tool in making decisions about appropriate vocational training programs.

The reliability data obtained in this study are also useful in comparing the VACG to other behavior rating scales that measure social and vocational skills. These comparisons can be useful in making judgments about the relative accuracy of the VACG. Cain, Levine, and Elzey (1977) reported test-retest coefficients ranging from .88 to .97 for the domains of the Cain-Levine Social Competency Scale. These authors also reported an interrater reliability coefficient of .94 for their instrument. Halpern, Raffeld, Irvin, and Link (1975) reported test-retest and internal consistency coefficients for the Social and Prevocational Information Battery. The test-retest coefficients for the nine domains of this instrument ranged from .70 to .79 for a junior high school sample and from .62 to .78 for senior high subjects. Halpern et al. (1975) reported Kuder-Richardson coefficients of internal consistency ranging from .78 to .82 for the Social and Prevocational Information Battery. Finally, Nihira, Foster, Shellaas, and Leland (1975) reported interrater reliability coefficients of .71 to .91 for Part One domains of the AAMD Adaptive Behavior Scale. Coefficients for Part Two domains ranged from .37 to .70. The reliability data obtained in this study of the VACG compare favorably with the results reported in these studies of similar psychometric properties of vocational rating scales.

The results of the validation procedure suggested that domain scores of the VACG differentiated between groups of individuals with diverse employment characteristics. The domain score averages obtained by four subject groups with different vocational placements and work histories were significantly different when tested with several multivariate statistical procedures. Moreover, step-down, univariate analyses of variance were statistically significant for each VACG domain. Many of the observed differences were in a pattern in which subjects in the most restrictive, sheltered placements scored lowest and subjects in competitive employment settings scored highest. Tukey's honestly significant difference tests suggested that, with the exception of the Learning domain, VACG scores can be used to make valid discriminations between individuals seeking their first competitive job and successful disabled employees.

Many of the observed differences between groups in the validation procedure are supported by the literature comparing work performance of disabled and nondisabled individuals. Two studies of work performance were conducted at E.I. du Pont de Nemours and Company (E.I. du Pont de Nemours, 1982; Sears, 1975). These studies surveyed 2,745 employees with a wide range of disabilities such as blindness, orthopedic problems, mental retardation, hearing impairments, and epilepsy. The findings provide a possible explanation for some of the differences that were found between the competitively employed subjects in this study. For example, E.I. du Pont de Nemours reported that, in 1981, the attendance records of disabled and nondisabled employees were comparable. This finding may explain the higher ratings obtained in this study by the competitively employed subjects with handicaps in the attendance/endurance domain. Raters may have scored these individuals higher on attendance-related items because they met or exceeded the raters' expectations for dependability. Other studies have suggested that similar employees have average or better than average attendance records (The President's Committee on Employment of the Handicapped, 1981). An earlier du Pont study suggested that 79% of workers with handicaps were rated similarly or better than the total work force on measures of attendance (Wolfe, 1973).

Another VACG domain in which disabled, competitively employed subjects with handicaps were rated higher than their nondisabled counterparts was the independence area. Again, data from studies investigating the work performance of employees with handicaps in the competitive labor force suggested that these individuals may perform better than nondisabled employees. The du Pont studies reported that the disabled employees improved their performance of job duties from 91% to 92% over the survey years as compared to 91% for nondisabled workers (Sears, 1975; E.I. du Pont de Nemours, 1981). In a review of the social and cost factors involved in employing persons with handicaps, Weisgerber, Dahl, and Appleby (1981) cited a joint National Association of Manufacturers/U.S. Chamber of Commerce study which surveyed 279 businesses and found that approximately 90 % of the employers reported no cost increase as a result of hiring employees with handicaps, rated their job performance as good as other workers, indicated their attendance was better than nondisabled workers, and felt persons who were disabled had better work habits and safety records than nonhandicapped workers. Weisgerber et al. (1981) concluded their discussion of the work performance of persons with handicaps by stating that the findings are conclusive that it is good business practice to hire persons with handicaps.

The literature has suggested that workers with handicaps may be better than nondisabled workers in areas such as attendance, work habits, safety, and job performance. The ratings of competitively employed workers with handicaps on the VACG would support these findings. In the VACG validation, the competitively employed handicapped workers were rated higher than any other subject group in the attendance/endurance, independence, behavior, and social skills domains. These domains contain items measuring work attendance, safety, appropriate work habits such as completing assigned tasks, and work-related social skills including asking supervisors or co-workers for help.

The recent emphasis on improving employment training options for persons with handicaps will have an impact on vocational assessment. As more training alternatives are developed, assessment procedures that have a direct relationship to curriculum planning and training will be needed. The ecological analysis approach, characterized by instruments such as the VACG that systematically identify survival skills, may fill this need. However, before selecting any instrument for a vocational assessment program, consumers must consider evidence of its technical adequacy. The data presented in this study will allow persons interested in the VACG to evaluate its appropriateness as a measure of the social and vocational skills of persons with handicaps who are interested in competitive employment in the service occupations.

References

Anastasi, A. (1976). Psychological testing (4th ed.). New York: Macmillan.

Bates, P.E., & Hanson, H.B. (1983). Behavioral assessment. In J.L. Matson & S.E. Breuning (Eds.), Assessing the mentally retarded (pp. 27-64). New York: Grune & Stratton.

Cain, L.F., Levine, S., & Elzey, F.F. (1977). Cain-Levine social competency scale. Palo-Alto, CA: Consulting Psychologists Press, Inc.

Cobb, H.V. (1972). The forecast of fulfillment. New York: Teachers College Press.

Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. Psychometrika, 16, 297-334.

Cronbach, L.J. (1960). Essentials of psychological testing. New York: Harper & Row.

E. I. du Pont de Nemours and Co. (1982). Equal to the task. Wilmington, DE.

Gold, M.W. (1973). Research on the vocational habilitation of the retarded: The present, the future. In N. Ellis (Ed.), International review of research in mental retardation (Vol. 6, pp. 97-147). New York: Academic Press.

Halpern, A., Raffeld, P., Irvin, L.K., & Link, R. (1975). Social and prevocational information battery. Monterey, CA: CTB/McGraw-Hill.

Halpern, A. S., Lehmann, J. P., Irvin, L. K., & Heiry, T. J. (1982). Contemporary assessment for mentally retarded adolescents and adults. Baltimore: University Park Press.

Hasazi, S., Preskill, H., Gordon, L., & Collins, C. (in press). Factors associated with the employment status of handicapped youth. Exceptional Children.

Menchetti, B. M., Rusch, F. R., & Owens, D. M. (1983). Vocational training. In J. L. Matson & S. E. Breuning (Eds.), Assessing the mentally retarded (pp. 247-284). New York: Grune & Stratton.

Mithaug, D., Horiuichi, C., & Fanning, P. N. (1985). A report on the Colorado statewide follow-up survey of special education students. Exceptional Children, 51, 397-404.

Neff, W. S. (1966). Problems of work evaluation. Personnel and Guidance Journal, 44, 53-66.

Nihira, K., Foster, R., Shellhaas, M., & Leland, H. (1975). Manual for AAMD adaptive behavior scale. Washington, DC: American Association on Mental Deficiency.

President's Committee on Employment of the Handicapped (1981). Special report: Disability and employment. Washington, DC: Government Printing Office.

Rusch, F. R., Schutz, R. P., & Agran, M. (1982). Validating entry level survival skills for service occupations: Implications for curriculum development. Journal of the Association for the Severely Handicapped, 8, 32-41

Rusch, F. R., Schutz, R. P., Mithaug, D. E., Stewart, J. E., & Mar, D. E. (1982). Vocational assessment and curriculum guide. Seattle, WA: Exceptional Education.

Schalock, R. L., & Karan, O. C. (1979). Relevant assessment: The interaction between evaluation and training. In G. T. Bellamy, G. O'Connor, & O. C. Karan (Eds.), Vocational rehabilitation of severely handicapped persons (pp. 33-54). Baltimore: University Park Press.

Schneck, G. R. (1981). Program improvement in vocational assessment for the handicapped. In R. A. Stodden (Ed.), Vocational assessment: Policy paper series document 6. Urbana-Champaign: University of Illinois, Leadership Training Institute.

Sears, J. H. (1975). The able disabled. Journal of Rehabilitation, 41(2), 19-22.

Wehman, P., Kregel, J., & Seyfarth, J. (in press). Employment outlook for mentally retarded young adults after leaving school. Rehabilitation Counseling Bulletin.

Wehman, P., Renzaglia, A., & Bates, P. (1985). Functional living skills for moderately and severely handicapped individuals. Austin, TX: Pro-Ed.

Weisgerber, R. A., Dahl, P. R., & Appleby, J. A. (1981). Training the handicapped for productive employment. Rockville, MD: Aspen Systems Corp.

Will, M. (1984). OSERS programming for the transition of youth with disabilities: Bridges from school to work life.

Washington, DC: Office of Special Education and Rehabilitation Services, U.S. Department of Education.

Wolfe, J. (1973). Disability is no handicap for du Pont. _The Alliance Review_, _50_, 121-125.

Wolfenberger, W. (1967). Vocational preparation and occupation. In A. A. Baumeister (Ed.), _Mental retardation_. Chicago: Aldine.

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Date/Time Staff	Facility and Address	Contact Person	Region & Agency
6/16 9:00 DW	Aid to Retarded Citizens Inc. 2719 S. 11th St. Springfield, IL 62703	Mark Schneider Patrick Wear, II Executive Director (217-789-2560)	3 DMH/DD (411)
6/12 9:00 JST	Ctr. for Disabled Student Serv. Chicago City-Wide College 226 W. Jackson, 6th Floor Chicago, IL 60606	Dan Woodyatt Sally Vernon Director (312-641-2595)	5B DMH/DD (370)
6/26 9:00 JST	The Center for Rehabilitation and Training of the Disabled 6610 N. Clark St. Chicago, IL 60626	Carol Woodworth (312-929-8200) Cathy Lorber, Ph.D. Stuart G. Ferst Executive Director (312-973-7900)	5A DMH/DD (403)
*6/3 9:00 DW/JT	Chicago Assoc. for Retarded Citizens 8562 S. Vincennes Chicago, IL 60620	Robert Lewis Carolyn B. Thompson Dir. of Placement Services (312-651-3720)	5B DMH/DD (401)
6/15 9:00 JST	Comprehensive Services Box 428 Mt. Vernon, IL 62864	Sharon Smith John Metcalf Rehab. Director (618-242-7300)	4 DMH/DD (231)
6/12 9:00 JT	Developmental Services Ctr. 1304 W. Bradley Avenue Champaign, IL 61821	Carole Powers Rick Krandel Dale Morrisey Chief Executive Officer (217-356-9176)	3 DMH/DD (422)
6/22 9:00 DW	Effingham Association for Retarded Citizens 618 W. Main St. Teutopolis, IL 62467	Michael Poe Michael W. Fortner Executive Director (217-857-3186)	4 DMH/DD (475)
6/9 9:00 JT	El Valor Corporation 1850 W. 21st St. Chicago, IL 60608	Nina Martino Gloria Morales Curtin Dir. of Adult Services (312-666-4511)	5B DMH/DD (539)
6/19 9:00 DW	Employer Resource Service/Arrise 9790 Allen Street Rosemont, IL 60018	Rosalie Mattern James Johnson Executive Director (312-771-2945) (312-671-5877)	2 DMH/DD (363)

Date/Time Staff	Facility and Address	Contact Person	Region & Agency
6/16 9:00 JST	Franklin-Williamson Workshop 902 W. Main St. West Frankfort, IL 62896	Jeff Horton Gail Kear Executive Director (618-983-5421) (618-937-6483)	1 DORS (234)
6/15 9:00 JT	Happiday Centers, Inc. 1005 W. End Ave. Chicago Heights, IL 60411	Diane Alexander Jim Kompik Patrick O'Brien Executive Director (312-755-8030)	6 DMH/DD (570)
6/22 9:00 JT	Iroquois ARC Box 324 Watseka, IL 60970	Roberta Ioder Louellen Strong Executive Director (815-432-5288) (815-432-6191) SEP Office	3 DMH/DD (140)
6/16 9:00 JT	Job Resources for the Disabled 3140 N. Cambridge Chicago, IL 60657	Andy Tayaka Ms. Michael Rooney Executive Director (312-327-4412)	5 DORS (337)
*6/23 9:00 DW	Lake County Society for Human Development 3441 Sheridan Road Zion, IL 60099	Linda Milz Randy R. Ross Executive Director (312-872-1700)	2 DMH/DD (419)
*6/2 9:00 JST/JT	The Lambs, Inc. P.O. Box 520 Libertyville, IL 60048	Julie Metzger Gerald Y. Friedman Executive Director (312-362-4636 or 361-3320)	2 DMH/DD (391)
6/30 9:00 JST	McDonough Co. Rehab. Ctr. 900 S. Deer Road Macomb, IL 61422	Mary Fran Jim Starnes President (309-837-4876)	1 DMH/DD (364)
6/30 9:00 JT	North Shore Association for the Retarded 7855 K Gross Point Road Skokie, IL 60077	Pat Baer Gerald Gully Executive Director (312-869-5515)	2 DMH/DD (422)
6/18 9:00 JST	Occupational Development Ctr. 400 N. East St. Bloomington, IL 61701	Paula Knutson Lyn Hyrska Tomm Foss Executive Director (309-828-7324)	3 DMH/DD (451)

Date/Time Staff	Facility and Address	Contact Person	Region & Agency
6/9 9:00 DW	Open Door Rehab. Ctr. 208 Beaver Street Yorkville, IL 60560	Steve Stricker Marilyn Barman Executive Director (312-553-9222)	2 DMH/DD (671)
6/8 9:00 JST	Opportunity House, Inc. 202 Lucas St. P.O. Box 301 Sycamore, IL 60178	Peter Bauman John R. Kroos Executive Director (815-895-5108)	1 DMH/DD (344)
6/10 9:00 JST	Orchard Village 7670 Marmora Skokie, IL 60077	Jack McAllister Vocational Director John Winke Executive Director (312-967-1800)	2 DMH/DD (576)
6/18 9:00 JT	Park Lawn 5340 W. 111th St. Oak Lawn, IL 60453	Brother Frank Portada Coord. of Voc. Services Jim Weiss Executive Director (312-424-8616)	6 DMH/DD (431)
6/8 10:00 JT	Ray Graham Association 420 W. Madison St. Elmhurst, IL 60126	Julie Seta James DeOre Executive Director (312-543-2440)	6 DMH/DD (407)
6/10 10:00 DW	Seguin Services Inc. 3145 S. 55th Avenue Cicero, IL 60650	Bob Brocken Rick Miller Executive Director (312-863-3803)	2 DMH/DD (420)
6/11 9:00 JST	Special Education Parents Alliance 305 22nd St., Suite K-164 Glen Ellyn, IL 60137	Steve Tenpas Marjorie Lee President (312-790-3060)	5 DORS
*6/1 9:00 DW	Spectrum Vocational Serv. 2302 Wisconsin Downers Grove, IL 60515	Beth Anderson Peggy White Associate Director (312-852-7520) (312-355-6533)	6 DMH/DD (459)
6/17 9:00 DW/JST	Victor C. Neumann Assoc. 2354 N. Milwaukee Chicago, IL 60647	Susan Berns Baron Ilene Rosenberg Dir. of Vocational Serv. Carl M. LaMell Executive Director (312-235-6004)	5A DMH/DD (135)

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6/29 9:00 JST	Warren Achievement Ctr. 1314 S. Main St. Monmouth, IL 61462	Mike Streight Jo McVey President (309-734-8331)	1 DMH/DD (428)
6/23 8:00 JT	Cornerstone Services Inc./ Will County Sheltered Workshop 2401 W. Jefferson Joliet, IL 60435	Cindy Lapicki Don Hespell James Hogan Executive Director (815-744-7204)	6 DMH/DD (487)

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SE1978	Rusch, F. R., Connis, R. T., & Sowers, J. (1978). The modification and maintenance of time spent attending to task using social reinforcement, token reinforcement and response cost in an applied restaurant setting. *Journal of Special Education Technology*, *2*, 18-26	4
SE1979a	Rusch, F. R. (1979). Toward the validation of social/vocational survival skills. *Mental Retardation*, *17*, 143-144.	2
SE1979b	Schutz, R. P., Rusch, F. R., & Lawson, D. S. (1979). Evaluation of an employer's procedure to eliminate unacceptable behavior on the job. *Community Services Forum*, *1*, 5-6.	1
SE1979c	Rusch, F. R. (1979). A functional analysis of the relationship between attending and producing in a vocational training program. *The Journal of Special Education*, *13*, 399-411.	6

SE1979d	Rusch, F. R., & Schutz, R. P. (1979). Non-sheltered employment of the mentally retarded adult: Research to reality? *Journal of Contemporary Business*. *8*, 85-98.	5
SE1979e	Sowers, J., Rusch, F. R., & Hudson, C. (1979). Training a severely mentally retarded young adult to ride a city bus to and from work. *AAESPH Review*, *4*, 15-23.	3
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SE1980b	Rusch, F. R., Weithers, J. A., Menchetti, B. M., & Schutz, R. P. (1980). Social validation of a program to reduce topic repetition in a non-sheltered setting. *Education and Training of the Mentally Retarded*, *15*, 208-215.	4
SE1980c	Connis, R. T., & Rusch, F. R. (1980). Programming maintenance through sequential withdrawal of social contingencies. *Behavior Research of Severe Developmental Disabilities*, *1*, 249-260.	4
SE1980d	Rusch, F. R., & Mithaug, D. E. (1980). *Vocational training for mentally retarded adults: A behavior analytic approach*. Champaign, Illinois, Research Press, 1980, 223 pp. (2612 N. Mattis Ave., Champaign Illinois 61820, 217-352-3273).	
SE1980e	Rusch, F. R. (1980). Reaction to "Work productivity and the developmentally disabled." In J. A. Leach (Ed.), *Productivity in the workforce: A search for perspective*, pp. 89-92. Champaign, IL: Office of Vocational Education, Department of Vocational and Technical Education, College of Education, University of Illinois.	2
SE1980f	Rusch, F. R., Rusch, J. C., Menchetti, B. M., & Schutz, R. P. (1980). Survey-Train-Place: Vocational preparation for the severely handicapped student. Unpublished manuscript.	12
SE1981a	Rusch, F. R., & Schutz, R. P. (1981). Vocational and social work behavior: An evaluative review. In J. L. Matson and J. R. McCartney (Eds.), *Handbook of behavior modification with the mentally retarded*. New York: Plenum Press, pp. 247-280.	9

SE1981b	Schutz, R. P., Jostes, K. F., Rusch, F. R., & Lawson, D. S. (1981). The use of contingent pre-instruction and social validation in the acquisition, generalization, and maintenance of sweeping and mopping responses. *Education and Training of the Mentally Retarded*, *15*, 306-311.	3
SD1981c	Rusch, F. R., & Menchetti, B. M. (1981). Increasing compliant work behaviors in a non-sheltered setting. *Mental Retardation*, *19*, 107-112.	2
SE1981d	Menchetti, B. M., Rusch, F. R., & Lawson, D. S. (1981). Employers' perceptions of acceptable procedures for use in competitive employment settings. *Journal of the Association for the Severely Handicapped*, *6*, 6-16.	5
SE1981e	Schneider, K., Rusch, F. R., Henderson, R. A., & Geske, T. G. (1981). Competitive employment for mentally retarded persons: Costs versus benefits. In William Halloran (Ed.), *Funding and cost analysis* (Policy paper series: Document 8), Urbana-Champaign, Illinois: Leadership Training Institute - Vocational and Special Education, University of Illinois. Reprinted in: *Interchange*, March, 1-6.	9
SE1981f	Schneider, K. E., Martin, M. E., & Rusch, F. R. (1981). Are we sacrificing quality? Costs versus benefits of sheltered and non-sheltered vocational training programs. *Counterpoint*, November, 1 and 28.	3
SE1981g	Rusch, F. R., & Kazdin, A. E. (1981). Toward a methodology of withdrawal designs for the assessment of response maintenance. *Journal of Applied Behavior Analysis*, *14*, 131-140.	3
SE1981h	Menchetti, B. M., & Rusch, F. R. (1981). An analysis of student teacher instructional delivery behavior in post-secondary settings. *B. C. Journal of Special Education*, *6*, 149-158.	10
SE1982a	Schutz, R. P., & Rusch, F. R. (1982). Competitive employment: Toward employment integration for mentally retarded persons. In K. L. Lynch, W. E. Kiernan, & J. A. Stark (Eds.), *Prevocational and vocational education for special needs youth*. Baltimore: Paul H. Brookes Publishers, pp. 133-159.	10
SE1982b	Karlan, G. R., & Rusch, F. R. (1982). Analyzing the relationship between acknowledgement and compliance in a non-sheltered work setting. *Education and Training of Mentally Retarded*, *17*, 202-208.	4

SE1982c	Martin, J. E., Schneider, K. E., Rusch, F. R., & Geske, T. G. (1982). Training mentally retarded individuals for competitive employment: Benefits of transitional employment. Exceptional Education Quarterly, 3, 58-66.	5
SE1982d	Rusch, F. R., Schutz, R. P., & Agran, M. (1982). Validating entry-level survival skills for service occupations: Implications for curriculum development. Journal of the Association for the Severely Handicapped, 7, 32-41.	5
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SE1983a	Rusch, F. R. (1983). Competitive vocational training. In M. Snell (Ed.), Systematic instruction of the moderately and severely handicapped, 2nd Edition. Columbus, Ohio: Charles E. Merrill Publishing Co., pp. 503-523.	10
SE1983b	Rusch, F. R., Schutz, R. P., & Heal, L. W. (1983). Vocational training and placement. J. L. Matson & J. A. Mulick (Eds.), Handbook of mental retardation. New York: Pergamon Press, pp. 455-466.	6
SD1983c	Menchetti, B. M., Rusch, F. R., & Owens, D. (1983). Assessing the vocational needs of mentally retarded adolescents and adults. In Johnny L. Matson & Stephen E. Breuning (Eds.), Assessing the mentally retarded. New York: Grune & Stratton, Inc., pp. 247-284.	15
SE1983d	Rusch, F. R. (1983). Evaluating the degree of concordance between observers' versus employers' evaluations of work behavior. Applied Research in Mental Retardation, 4, 95-102.	4

SE1983e	White, D. M., & Rusch, F. R. (1983). Social validation in competitive employment: Evaluating work performance. *Applied Research in Mental Retardation*, *4*, 343-354.	6
SE1983f	Mori, A. A., Rusch, F. R., & Fair, G. W. (1983). *Guidelines and best practices: Special populations--moderately/severely handicapped*. (Personnel development series), Urbana-Champaign, IL: Leadership Training Institute--Vocational and Special Education, University of Illinois.	92
SE1984a	Rusch, F. R., & Mithaug, D. E. (1985). Competitive employment education: A systems-analytic approach to transitional programming for the student with severe handicaps. K. Charlie Lakin & R. M. Bruininks (Eds.). *Strategies for achieving community integration of developmentally disabled citizens*, pp. 177-192. Baltimore: Paul H. Brookes Publishing Co.	8
SE1984b	Gifford, J. L., Rusch, F. R., Martin, F. R., & White, D. M. (1984). Autonomy and adaptability in work behavior of retarded clients. In Normal R. Ellis & Norman W. Bray (Eds.), *International review of research in mental retardation, Volume 12*, pp. 285-318, Academic Press.	17
SE1984c	Rusch, F. R., Menchetti, B. M., Crouch, K., Riva, M., Morgan, T., & Agran, M. (1984). Competitive employment: Assessing employee reactivity to naturalistic observation. *Applied Research in Mental Retardation*, *5*, pp. 339-351.	7
SE1984d	Chadsey-Rusch, J. C., Karlan, G. R., Riva, M. T., & Rusch, F. R. (1984). Competitive employment: Teaching conversational skills to mentally retarded adults in employment settings. *Mental Retardation*, *22* (5), 218-225.	4
SE1984e	Rusch, F. R., Chadsey-Rusch, J., White, D. M., & Gifford, J. L. (1985). Programs for severely mentally retarded adults: Perspectives and methodologies. In D. Bricker & J. Filler (Eds.). *Severe mental retardation: From theory to practice*, (pp. 119-140). Reston, Virginia: Council for Exceptional Children.	11

SE1984f	Rusch, F. R., Gifford, J. L., & Chadsey-Rusch, J. (1985). Behavioral training strategies and applied research in competitive employment. In Sherril Moon, Patricia Goodall, Paul Wehman (Eds.). *Critical Issues Related to Supported Competitive Employment: Proceedings from the first RRTC symposium on employment for citizens who are mentally retarded*, pp. 82-99. Richmond, VA: Rehabilitation Research and Training Center, School of Education, Virginia Commonwealth University.	18
SE1985a	Crouch, K. P., Rusch, F. R., & Karlan, G. P. (1984). Competitive employment: Utilizing the correspondence training paradigm to enhance productivity. *Education and Training of the Mentally Retarded*, *19* (4), 268-275.	4
SE1985b	Rusch, F. R., Morgan, T. K., Martin, J. E., Riva, M., & Agran, M. (in press). Competitive employment: Teaching mentally retarded adults self-instructional strategies. *Applied Research in Mental Retardation*, *6*, 389-407.	10
SE1985c	Rusch, F. R. (1985). *Glossary of dependent measures from the Employment Training Project*. Unpublished manuscript.	26
SE1985d	Rusch, F. R., Martin, J. E., & White, D. M. (1985). Competitive employment: Teaching mentally retarded employees to maintain their work behavior. *Education and Training of the Mentally Retarded*, *20*, 182-189.	4
SE1985e	Rusch, F. R. (Ed.). (1986). *Competitive employment issues and strategies*. Baltimore: Paul H. Brookes Publishing Co. (P.O. Box 10624, Baltimore, Maryland 21204, 301-377-0883).	
SE1985f	Martin, J. E., Rusch, F. R., Tines, J. A., Brulle, A. R., & White, D. M. (1985). Work attendance in competitive employment: Comparison between nonhandicapped and mentally retarded employees. *Mental Retardation*, *23* (3), 142-147.	8
SE1985g	Rusch, F. R. & Chadsey-Rusch, J. (1985). Employment for persons with severe handicaps: Curriculum development and coordination of services. *Focus on Exceptional Children*, *17* (9), 1-8.	13
SE1985h	Rusch, F. R. (1985). *Introduction to supported work*. Paper presented to the Illinois Transition Conference, Springfield, IL., November 18 and 19, 1985.	32

SE1986a	Martin, J. E., Rusch, F. R., Lagomarcino, T., & Chadsey-Rusch, J. (in press). Comparison between workers who are nonhandicapped and mentally retarded: Why they lose their jobs. *Applied Research in Mental Retardation*.	15
SE1986b	Trach, J. S., & Rusch, F. R. (in press). Research and trends in employment of adolescents with handicaps. Manuscript submitted for publication. In E. Cipani (Ed.), *Child and youth services*.	12
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SE1986d	Maxwell, C. H., Rusch, F. R., Chadsey-Rusch, J., & Renzaglia, A. (1986). Reported factors contributing to job terminations of individuals with severe disabilities. *Journal of the Association for Persons with Severe Handicaps*, *11* (1), 45-52.	4
SE1986e	Gifford, J. L., Wilson, J. W., & Rusch, F. R. (in press). Vocational rehabilitation. In Gualtieri, C. T., Schroeder, S. R., & Keppel, J. M. (Eds.). *Psychiatric treatment for mentally retarded people*. Washington, DC: American Psychiatric Press.	21
SE1986f	Chadsey-Rusch, J. G., & Rusch, F. R. (in press). Habilitation programs for mentally retarded persons with severe behavior problems. In R. P. Barrett (Ed.), *Treatment of severe behavior disorders: Contemporary approaches with the mentally retarded*. New York: Plenum Press.	40
SE1986g	Agran, M., & Rusch, F. R. (in press). Career and competitive employment education. In Diane Dietz & Johnny L. Matson (Eds.), *Introduction to mental retardation*. Glenview, IL: Scott, Foresman Co.	28
SE1987a	Rusch, F. R., Chadsey-Rusch, J., & Lagomarcino, T. (1986). Preparing students for employment. In Snell, M. (Ed.). *Systematic instruction for the moderately/severely handicapped* (3rd Edition). (pp. 471-490). Columbus, OH: Charles E. Merrill.	54
SE1987b	Hanley-Maxwell, C., Rusch, F. R., & Rappaport, J. (in press). An ecological perspective of job terminations for adults with handicaps. *Rehabilitation Counselling Bulletin*.	26

SE1987c	Martin, J. E.,. & Rusch, F. R. (in press). Use of the partial-sequential withdrawal design to assess maintenance of mentally retarded adults' acquired meal preparation skills. *Research in Developmental Disabilities*.	22
SE1987d	Rusch, F. R., Martin, J. E., Lagomarcino, T. R., & White, D. M. (in press). Teaching task sequencing utilizing the correspondence paradigm. *Education and Training in Mental Retardation*.	26
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SE1987g	Rusch, F. R., & Phelps, L. A. (1987). Secondary special education and transition from school to work: A national priority. *Exceptional Children*, *53*, 487-492.	4
SE1987h	Rusch, F. R., McNair, J., & DeStefano, L. (1987). *Research priorities in secondary special education and transitional services: A national survey*. Unpublished manuscript.	26
SE1987i	Rusch, F. R., Schutz, R. P., Trach, J., Winking, D., Tines, J., & Heal, L. (1987). Supported employment in Illinois. Unpublished manuscript.	8
SE1987j	McNair, J., Trach, J. S., Lagomarcino, T. R., & Rusch, F. R. (1986). Steps to employment: The supported employment model. Unpublished manuscript.	17
SE1987k	Rusch, F. R., & Minch, K. E. (in press). Identification of coworker involvement in supported employment: A review and analysis. *Research in Developmental Disabilities*.	25
SE1988a	Chadsey-Rusch, J., & Rusch, F. R. (in press). The ecology of the workplace. In R. Gaylord-Ross (Ed). *Vocational education for persons with special needs*. Palo Alto, CA: Mayfield Publishing.	37
SE1988b	Rusch, F. R., McKee, M., Chadsey-Rusch, J., & Renzaglia, A. (in press). Teaching a student with severe handicaps to self instruct: A brief report. *Education and Training in Mental Retardation*.	19

SE1988c	Lagomarcino, T. R., Trach, J. S., Rusch, F. R., & McNair, J. (in press). Overview of practices and emerging trends in employment services. In R. Barrett & J. L. Matson (Eds.). *Developmental disabilities: A life span approach*. New York: Grune and Stratton.	30
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John S. Trach	Technical Assistance
Debbie L. Winking	Seminar Series and Annual Meeting
Jeffrey L. Tines	Cost/Benefit Analysis
John Johnson	Technical Assistance
Thomas Lagomarcino	Technical Assistance

Research Faculty at the University of Illinois

Janis Chadsey-Rusch
Assistant Professor of
Special Education

Lizanne DeStefano
Assistant Professor of
Educational Psychology

Jane Dowling
Assistant Professor of
Special Education

James W. Halle
Associate Professor of
Special Education

Delwyn L. Harnisch
Associate Professor of
Educational Psychology

Laird W. Heal
Professor of Special
Education

L. Allen Phelps
Professor of Vocational
Education

Adelle M. Renzaglia
Associate Professor of
Special Education

Frank R. Rusch
Professor of Special
Education

Richard P. Schutz
Assistant Professor of
Special Education

Robert E. Stake
Professor of Educational
Psychology

Institute Advisory Committee

Secondary Transition Intervention Effectiveness Institute
University of Illinois at Urbana-Champaign

Dianne E. Berkell, Ph.D.
Department of Special Education
Long Island University
C. W. Post Center

Donn Brolin, Ph.D.
Department of Educational
and Counseling Psychology
University of Missouri-Columbia

R. Brian Cobb, Ph.D.
Department of Special Education
University of Vermont

Marge Goldberg
Pacer Center
Minneapolis, Minnesota

Dean Inman, Ph.D.
Center on Human Development
University of Oregon

Gary Lambour, Ph.D.
Special Education Consultant
Connecticut State Department
of Education

Robert L. Linn
Department of Educational
Psychology
University of Colorado-Boulder

Jeri Nowakowski, Ph.D.
Office of Educational Evaluation
and Policy Study
Northern Illinois University

Nick L. Smith, Ph.D.
School of Education
Syracuse University

Craig Thornton, Ph.D.
Mathematica Policy Research
Princeton, New Jersey

Susan S. Suter
Department of
Rehabilitation Services
Springfield, Illinois

Paul Wehman, Ph.D.
Rehabilitation Research and
Training Center
Virginia Commonwealth University

Claude Whitehead
Consultant
Washington, DC

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